01

HYPOFRACTIONATED RADIOTHERAPY IN PROSTATE CANCER, A CASE SERIES AT SHAUKAT KHANUM MEMORIAL CANCER HOSPITAL AND RESEARCH CENTRE

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Purpose / Objectives: Prostate cancer is the second most common cancer in males and radiotherapy is a well-recognised treatment option in prostate cancer. However, standard radiotherapy involves long course of radiotherapy which is time consuming and puts pressure on existing resources such as machine availability and treatment time. Experimental studies have shown that a/b ratio of prostate cancer cell is around 1.5 and they are more responsive to a larger fraction size which makes the basis for exploring the role of hypofractionated radiotherapy in prostate cancer. We are reporting our unique experience of treating prostate cancer with hypofractionated radiotherapy with 60Gy in 20 fractions at SKMCH.

Material and Methods: It is a Retrospective study and data was collected from hospital information system for patients with localised prostate cancer who were treated with hypofractionated radiotherapy between 2010 and 2012 at Shaukat Khanum Memorial cancer hospital and research centre.

Results: In total 12 patients were treated with hypofractionated radiotherapy with 60Gy in 20 Fractions with a fraction size of 3 Gy per fraction. Age of the patients ranged between 58-80years.Histological diagnoses was consistent with Prostate adenocarcinoma with Gleason Score of greater than 7 in 6 patients, PSA ranged from 1-31.Radiological staging showed T 3 Disease in 60%, T2 Disease in 50 % and 1 patient had T1 disease. 6 Patients were categorised as high risk, 4 as intermediate risk and 2 as low risk according to D Amico's Classification. Median f/up was 38 months (range 18-57 months).

All patients are still alive and PSA is well controlled with no biochemical failure so far. Toxicity was assessed on the basis of CTC criteria which showed that 4 out of 10 patients had G2 bowel toxicity and 2 out 10 men had Grade 2 bladder toxicity. No G3 and 4 toxicities were seen.

Conclusion: Hypofractionated radiotherapy offers the most efficient and economical way to deliver radiotherapy in prostate cancer. The toxicity results are comparable to the standard treatment. However evidence is still lacking to confirm the therapeutic gain offered by larger fraction size in prostate cancer. In developing countries like Pakistan where there is pressure on the resources, hypofractionation results in saving treatment time, medical resources and thereby improves patient care.

02

OUTCOME OF RENAL CELL CARCINOMA MANAGED SURGICALLY AT SHAUKAT KHANUM MEMORIAL CANCER HOSPITAL & RESEARCH CENTRE; A 5 YEAR RETROSPECTIVE ANALYSIS

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Purpose / Objectives: Renal Cell Carcinoma (RCC) is the most common tumour arising in kidney, incidence of the disease is increasing worldwide, and much of it is attributable to incidental detection via abdominal imaging for other causes. Overall early tumours are associated with good survival outcomes in comparison to advanced disease. The objective of this study is to analyse the characteristics of RCC and overall survival of patients managed surgically.

Material and Methods: Survival analysis of 165 patients with renal cell carcinoma managed between 2006 and 2012 at Shaukat Khanum Memorial Cancer Hospital & Research Centre. Demographics, family history of cancer, clinical presentations, staging, histopathological type, type of surgery, additional surgery and overall survival and stage wise survival outcome was analysed using Kaplan-Meier curve.

Results: A total of 165 Nephrectomies were carried out in study period. Mean age was 52.56 + 14.1. Majority of patients were males 91 (55.2%), 87 (52.7%) involved left kidney, 15 (9.1%) patients were Diabetic, majority of patients 138(83.6%) belonged to Punjab province followed by 20 (12.1%) patients to KPK. 06 (3.6%) patients had family history of RCC. Among clinical presentations, 58 (35.1%) presented with pain, 38 (23.1%) with haematuria and 51 (30.9%) were incidental tumors.20 (12.1%) had additional surgery along with radical nephrectomy, out of which 09 (5.4%) underwent para-aortic lymph node dissection and 06 (3.6%) IVC explorations. Estimated overall 5 year survival was 80.4%. Overall stage wise survival was 92.9%, 82.9%, 56.3% and 28.6% for T1, T2, T3 and T4 disease respectively.

Conclusion: RCC presents with variety of symptoms, though there is increase in incidental tumours. Overall survival of confined disease is good in comparison to advance disease.

03

MANAGEMENT STRATEGIES OF RENAL TUMOURS WITH INFERIOR VENA CAVA INVOLVEMENT

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Introduction: Inferior vena cava (IVC) involvement in renal tumours is a challenging problem to the operating surgeon. Expertise in dissection, isolation and exploration of this large calibre vein is important in management of these tumours. We report our institutional experience in operative management of renal tumours with IVC involvement.

Methods: All patients with renal tumours and IVC involvement who underwent surgery between September 2014 and August 2015 were included. Demographic and clinical data, type of tumour, extent of IVC involvement, and operative management strategies were recorded.

Results: Between September 2014 and August 2015, a total of 78 nephrectomies were performed. Of these, 6 patients with renal tumours involving the IVC were identified. One patient had Wilms' tumour, 2 adrenal tumours, one clear cell sarcoma, and 2 patients had renal cell carcinoma. One patient had tumour adherent to IVC which was separated using sharp dissection. Three patients were managed with IVC thrombectomy as the tumour could be pulled out from IVC through renal vein ostium. One patient required sleeve resection and lateral repair of IVC, while one patient had segmental involvement of IVC which required segmental IVC resection and end-to-end anastomosis.

Conclusion: Having expertise in the management of IVC tumour thrombus can increase the chances of curative surgery for renal tumours. A pragmatic approach to handle IVC thrombus based on extent of the thrombus and presence or absence of direct invasion of IVC is needed in such cases. Even direct invasion of IVC with renal tumour is not a contraindication for surgery as it is possible to safely resect the involved segment and reconstruct IVC with end to end anastomosis.

04

CLINICAL OUTCOME OF HIGH GRADE NON MUSCLE INVASIVE BLADDER CANCER TREATED WITH INTRAVESICAL BCG

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Objective: Treatment of high grade non muscle invasive bladder cancer (NMIBC) is challenging due to its high rate of recurrence and progression to muscle invasive bladder cancer (MIBC). Intravesical Bacillus Calmette Guerin (BCG) is the current treatment of choice in management of high grade NMIBC. The objective of this study is to determine clinical outcome of intravesicle BCG treatment and to identify prognostic factors for recurrence & progression in high grade NMIBC

Methods: Retrospectively reviewed the data of all the high grade NMIBC patients who were treated with 6 cycles of intravesical BCG from January 2008 to June 2014 at Shaukat Khanum Cancer Hospital & Research Centre Lahore. Recurrence & progression were determined by check cystoscopy & imaging. Prognostic significance of age, gender, BMI, smoking, tumour size, tumour outlook, multiplicity for recurrence & progression determined by chi square cross tab statistical analysis using SPSS 20.

Results: A total of 99 patients (male=89, female=10) were included with mean age of 62years ±10.97.After a mean follow up of 26.74±19.0months, 47(47.5%) patients had recurrence & 15(15.2%) progressed to MIBC. Recurrent NMIBC further managed with RE BCG 24(75%), radical cystectomy 3(9.3%), on surveillance cystoscopy only 1(3.1%) while 4(12.5%) lost to follow up. 5 (20.83%) of RE BCG patients had recurrence & progressed. Stage at progression was T2 9(45%), T3 1(5%), & metastatic 10(50%).Progressed bladder cancer managed with radical cystectomy 4(20%), chem0-XRT 3(5%), chemo 8(40%), palliative care only 1(5%), while 4(20%) patient did not seek any treatment & lost to follow up. Regarding prognostic factors age >70 (p=0.329), female gender (p=0.416), BMI>30(p=0.620) had no association but smoking (OR=3.3 p=0.037), recurrent high grade (OR=2.7 p=0.046), tumour size>3cm (OR=4.01 p=0.006), multiplicity (OR=3.2 p= 0.022), non papillary tumours (OR=3.7 p=0.009) had significantly associated with progression.

Conclusion: High-grade NMIBC smoker patients with recurrent high grade, non papillary large multiple tumour had high risk of progression and should be treated aggressively.

05

STEREOTACTIC RADIATION THERAPY FOR ADRENAL METASTASES

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Purpose/Objective: The adrenal gland is a common site of metastasis in lung and other cancers. Surgical resection, radiofrequency ablation and chemoembolization are used to treat these metastases. Stereotactic body radiation therapy (SBRT) is being investigated as a non-invasive alternative for the treatment of these lesions. We present our experience of using SBRT for the treatment of adrenal metastases.

Materials/Methods: We conducted an IRB approved, retrospective review of patients with adrenal metastases treated with SBRT. Treatment details were reviewed and tumour response was evaluated using Response Evaluation Criteria in Solid Tumours (RECIST) at time of first post-SBRT CT scan and also for any subsequent CT scans obtained at follow-up. Best tumour response was defined as the greatest percent tumour reduction or least amount of disease progression noted on any post-SBRT CT.

Results: Twenty-five patients were identified with 30 metastatic adrenal lesions treated with SBRT between the years 2001 and 2012; median age at treatment was 60.4 years (range 25.8 – 85). Primary diagnoses included NSCLC (15 patients, 19 lesions), small cell lung cancer (1 patient), hepatocellular carcinoma (3 patients) and other (6 patients). Five patients had solitary adrenal metastases at time of SBRT. Twelve lesions received a single fraction - median dose 18 Gy (14 - 18). Eighteen lesions were treated with multiple fractions with median dose of 32 Gy (16-40) and median dose/fraction of 7 Gy (3 – 8).The median GTV was 70.97cc (0.69 – 984.54) and median PTV was 72.8cc (3.21 – 984.54). Median follow-up for first post-SBRT CT (n=22 lesions) was 1.6 months (m) (0.87 – 5.37) and for CT showing best tumour response post-SBRT (n=14 lesions) was 4.7m (0.9 – 44.8).
Tumour response is presented in the table.

	All Lesion	NSCLC Lesions	Single Fraction SBRT Lesions	Multiple Fraction SBRT Lesions
Median Percent Tumor Response at First Post-SBRT CT(%)	7.6 (-34.5 – 100)	8.7(-34.5 – 100)	8.7 (-26.3 – 23)	7.7 (-34.5 – 100)
Complete or Partial Response (CR or PR)	2 (1 CR, 1 PR) (9%)	2 (1 CR, 1 PR) (13%)	0	2 (1 CR, 1 PR) (13.3%)
Stable Disease (SD)	17 (77%)	12 (80%)	6 (86%)	11 (73.3%)
Progressive Disease (PD)	3 (14%)	1 (7%)	1 (14%)	2 (13.3%)
Median Best Tumor Response(%)	27.6 (-34.5 – 100)	20.3 (-34.5 – 100)	30.9 (-11.7 – 100)	27.6 (-34.5 – 100)
CR or PR	6 (2 CR, 4 PR) (43%)	4 (2 CR, 2 PR) (40%)	2 (1 CR, 1 PR) (50%)	4 (1 CR, 3 PR) (40%)
SD	7 (50%)	5 (50%)	2 (50%)	5 (50%)
PD	1 (7%)	1 (10%)	0	1 (10%)

No grade 3 or 4 acute toxicities were noted; 1 patient experienced duodenal perforation due to ulcer 14m after treatment with 18 Gy in 1 fraction. At time of analysis 16 patients are deceased with median survival after SBRT of 4.8m (0.4 – 26.5); 5 patients are alive with median survival after SBRT of 33.1m (2-42.3). One patient with NSCLC was treated to the left adrenal lesion thrice in 4 years; he is living 42m after first course of SBRT.

Conclusion: Our results suggest that SBRT for treatment of adrenal metastases is feasible and efficacious in demonstrating tumour control. Further study of impact on survival and quality of life is warranted.

06

FOXM1: A CELL CYCLE PROTEIN USED FOR THERAPEUTIC TARGET IN PHILADELPHIA CHROMOSOME-POSITIVE LEUKEMIA CELL

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Objectives: FOXM1 is a transcription factor that is highly expressed in pre-B cell cycle of Philadelphia positive chromosome leukaemia (Ph+) in Chronic Myelogenous Leukaemia (CML) and Acute Lymphocytic Leukaemia (ALL) patients. By genomic-wide molecular search, we recognized that FOXM1 is the main regulator protein for cell growth, proliferation and progression. The BCR-ABL1 tyrosine kinase causes neoplastic transformation of pre-B cells which lead to Ph+ chromosome in ALL and CML. FOXM1protein can be therapeutically targeted to inhibit the cellular transformation.

Materials/ Methods: Pre-B cells were transformed with a retroviral BCR-ABL expression vector which led to an increased expression of Foxm1 protein levels. Consistent with this, FOXM1 protein levels in patient-derived Ph+ ALL samples were almost 12-fold higher than in healthy B cells and B cell precursors. In a cohort of 100 Ph+ ALL /CML patients, the FOXM1 promoter region was observed to be significantly de-methylated in comparison with normal pre-B cells.

Results: A genetic model for FOXM1 loss-of-function using Foxm1fl/fl mice was developed. Deletion of FOXM1 decreased ALL/CML cell viability, proliferative capacity and colony formation of FOXM1. Injection of 50,000 FOXM1+/+ leukemic cells into NOD/SCID mice revealed reduced leukemogenesis in vivo. Foxm1 deleted ALL/CML cells showed a higher sensitivity towards Imatinib (a tyrosine kinase inhibitor) compared to the control cells. We have also found that FOXM1 decreased levels of reactive oxygen species via up-regulation of the antioxidant response molecule catalase. As potential therapeutic agents to target FOXM1, we evaluated the effects of a previously described ARF peptide (AA 26-44) and the Thiostrepton antibiotic. Both inhibit the function of FOXM1 and caused apoptosis in Ph+ ALL/CML cancer cells. The predictive value of FOXM1 expression in ALL/CML cancer cells was evaluated, an increase expression of FOXM1was noted to be correlated with the occurrence of relapse and shorter survival rate in ALL/CML patients.

Conclusion: FOXM1 is a pre-B cell transcription factor, a novel protein which can be targeted as a therapeutic option in any malignant cell with Ph+ chromosomes in CML and ALL adult patients.

07

POLYMORPHISM OF CYP1A1 GENE AND ACUTE LYMPHOBLASTIC LEUKEMIA RISK

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Purpose/Objectives: Acute lymphoblastic leukaemia (ALL) is the most common paediatric cancer. Exposure to environmental toxins and carcinogens is among the suspected risk factors for the disease. These carcinogens in human body require multiple enzyme system for their metabolism. Cytochrome P-450 1A1 is an important enzyme of phase-I of xenobiotic metabolism. Phase-I metabolism consists of activation of xenobiotics. Therefore the individuals who possess polymorphism in CYP1A1 gene may have altered ability to metabolize xenobiotics as compared to other individuals and therefore may be at higher risk of developing ALL. CYP1A1 gene is known to contain 4 sequence polymorphisms M1, M2, M3 and M4. The current study aims to investigate the role of CYP1A1 genetic variants as predisposition factor in ALL development.

Material/Methods: Peripheral blood was collected from ALL patients as well as controls from Jinnah Postgraduate Medical Centre (JPMC) and National Institute of Child Health (NICH). Genomic DNA was isolated using conventional phenol chloroform method. Specific segments of DNA were amplified by polymerase chain reaction (PCR) and possible genetic polymorphisms in CYP1A1 gene were analysed by restriction fragment length polymorphism (RFLP).

Results: In case of M1 (CYP1A1*2A), which represents a T to C transition; wild type (TT) as well as variant alleles (TC, CC) were observed. M2 (CYP1A1*2C) shows A to G substitution and subjects contain wild type (AA) as well as variant (AG) allele. For M3 (CYP1A1*3), which comprises of T to C transition, any variant allele (TC or CC) was not observed both in cases or controls. M4 (CYP1A1*4) represents C to A substitution. Both wild types (CC) as well as variant allele (CA) were found in patients as well as controls.

Conclusions: Inconsistent patterns have been observed for the association of CYP1A1 gene polymorphism with ALL risk in different populations. The results of this study will therefore help to evaluate the unestablished frequency of genetic variants of CYP1A1 in ALL patients. The identification of CYP1A1 gene variants as an important molecular target may enhance our understanding of molecular mechanism involved in ALL development and progression and may highlight the underlying cause of differences observed among patients in response to ALL treatment.

08

NEUROLOGIC COMPLICATIONS IN CHILDREN WITH ACUTE LYMPHOBLASTIC LEUKEMIA: EXPERIENCE FROM A FROM A TERTIARY CARE HOSPITAL IN A DEVELOPING COUNTRY

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Objective: To describe the frequency, clinical profile and outcome of neurological complications in children with acute lymphoblastic leukaemia, admitted in a tertiary care hospital.

Methods: This was a descriptive retrospective study conducted at Aga khan Hospital, Karachi, comprising data related to children with acute lymphoblastic leukaemia, below 16 yr. of age, with acute neurological complications admitted between October2009 to December 2014. Data was analysed by using SPSS version 19.

Results: During a 5 year period, we retrospectively collected 42 neurological events (17%), from 242 children with acute lymphoblastic leukaemia treated on BFM based COG protocol. Of the total 42 children with neurological complications 25(59.5%) were male, 32 (76%) were between 1-10 year of age. 32(76.2%) had precursor B & 10(23.8%) had T-cell ALL. 15 patients (35.7%) developed neurological complications during induction of remission. 11(26.2%) had altered level of consciousness, 27 (64.3%) had convulsions & 8 (19%) had motor weakness/ hemiplegia. Systemic chemotherapy (including high dose methotrexate, vincristine & L-asparginase) & intrathecal methotrexate (19%) seems to be the most common predisposing factor. Intracranial bleed in 2 (4.8%) and peripheral neuropathy in 1 patient. Radiological findings suggestive of PRES in 4 (9.5%), leuco- encephalopathy in 8(19%), acute infarct in 7(16.7%) & venous thrombosis in 2 (4.8%). Most of the patients had gross / full recovery by hospital discharge, 4 (9.5%) expired & 2 (4.8%) had neurological deficit at hospital discharge.

Conclusion: Although most patients had gross/ full recovery of neurological deficit, neurological complications are frequent events during ALL therapy, and require rapid detection and prompt treatment to limit permanent damage.

09

OUTCOMES OF FIRST LINE CHEMOTHERAPY IN CHRONIC LYMPHOCYTIC LEUKEMIA PATIENTS TREATED AT SHAUKAT KHANAM MEMORIAL CANCER HOSPITAL AND RESEARCH CENTER LAHORE: A FIVE YEAR EXPERIENCE

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Introduction: Chronic lymphocytic leukaemia (CLL) is an extremely heterogeneous in terms of survival with and without treatment. However, there is promising data regarding improved outcomes with the use of chemotherapy in symptomatic early stage and advanced stage disease. Different chemotherapy regimens are currently in use as first line treatment including fludarabine with cyclophosphamide (FC), or fludarabine with cyclophosphamide and rituximab (FCR).

Objective: To evaluate objective response rates, overall survival and progression free survival in patients of CLL treated with different indications with available chemotherapy regimens.

Methods: This is retrospective descriptive study of all patients. All patients of chronic lymphocytic leukaemia from October 2008 to September 2013 were studied and analysed in September 2015. Patient's characteristics age, gender, haemoglobin, Lymphocyte count, white blood count, platelet count, bone marrow biopsy and CT scan before and after treatment analysed. Binet system was used for staging. Primary end points were overall survival (OS), and progression free survival (PFS). Secondary end points were objective response rates (ORR) in terms of complete response (CR), partial response (PR), stable disease (SD), progressive disease (PD). Objective response rates (ORR), overall survival (OS), progression free survival (PFS) was calculated with kaplan-meier survival analysis.

Results: Fifty seven patients were included. Out of which n=42 (74%) were male and n=12(26%) were female. Patients of Binet stage A were 10 (18%), B 20 (35%) and C 27(47%).Mean age was 50.9 years+8.2SD. Forty six (80%) patients were treated and 11 (20%) patients remained on watch and wait policy. Treatment indications were B symptoms 14 (30%), Bulky disease 18 (39%), progressive thrombocytopenia 4 (9%), Progressive anaemia 7 (15%), doubling lymphocyte count 4 (7%).Chemotherapy regimen used were FC in 38 (83%), FCR5 (11%), chlorambucil 2 (4%) and CVP 1 (2%) patients. Sixteen (35%) patients had CR, 19 (41%) PR, 4 (9%) SD, and 1 (7%) PD. ORR was 76 %. Two patient developed AKI, one patient died, three patient lost follow up during treatment. Eight patients (17%) relapsed after mean duration of 17.2 months+ 6.9SD (PFS). Median overall survival was 23 months.

Conclusion: Majority of patients of CLL responded well to conventional chemotherapeutic regimens with more than two third of patients have either PR or CR with good OS and PFS.

10

CLINICAL PROFILE, TREATMENT AND SURVIVAL OUTCOMES OF PEADIATRIC GERM CELL TUMORS: A PAKISTANI PERSPECTIVE

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Introduction: Germ Cell Tumours (GCT) are rare tumours on a population based analysis. Generally 80% of the GCTs are benign and 20% malignant GCT (constituting 2-3% of heterogeneous rare malignant paediatric tumours). GCT has a bimodal age distribution with first peak in infant age group and the second peak starts at adolescence. In paediatric age group an upward trend has been observed in Europe, Australia and the United States. Teenage girls are more frequently affected by GCT as compare to boys with a ratio of 1:0.8.

Methodology: All the paediatric patients who received treatment for histology proven Germ Cell tumour at Shaukat Khanum Memorial Cancer Hospital (SKMCH) from January 2006 to December 2014 was retrospectively reviewed. Patients over the age of 18 years were excluded. A total of 207 patients were included in the study. Patients were discussed in multi-disciplinary meeting and appropriate management was initiated. Children who had surgery outside our institution were also included in this study. After orchiectomy, standard treatment options included chemotherapy, retroperitoneal lymph node dissection (RPLND) and surveillance. Radiation therapy was used for palliative management of isolated metastatic deposits.

Results: In total 207 patients, 98(42.3%) were males and 109 (52.7%) females. The most common GCT was yolk sac tumour found in 90 (43.3%) children followed by mixed GCT in 40 (19.2%) and dysgerminoma in 34 (11.5%) patients. Gonads were the most commonly involved site in 161 (77.4%) patients with metastasis in 24 (11.5%) patients at presentation. Primary surgery was done in 11 patients and completion Surgery was carried out in 28 patients at SKMCH. Recurrence was recorded in 26 (12.5%) patients. Most of the patients (131) are well and followed up at regular intervals and 55 (26.4%) are lost from follow-up.

Conclusion: Despite the distinct clinical profile of paediatric GCT in Pakistani population, survival is comparable to published literature internationally.

11

CHEMOTHERAPY ALONE OR COMBINED CHEMOTHERAPY AND INVOLVED FIELD RADIOTHERAPY IN FAVORABLE RISK EARLY-STAGE CLASSICAL HODGKIN LYMPHOMA-A 10 YEARS EXPERIENCE

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Introduction: Hodgkins lymphoma is divided in Nodular lymphocyte predominant Hodgkin lymphoma and Classical Hodgkin lymphoma which is further sub-classified into four histological types, nodular sclerosis, mixed cellularity, lymphocyte depleted and lymphocyte rich Hodgkins Lymphoma is staged as early and advanced (Ann Arbor stage). Early-stage Hodgkin lymphoma (Ann Arbor stage I and II) into 2 groups i.e., favourable and unfavourable i.e Higher age, mediastinal bulk disease, raised ESR, B symptoms (fever > 38oC, drenching night sweats, unexplained weight loss >10% of total body weight over 6 months)

Objective: We looked at outcome of patients with early-stage(stage I-II) favourable risk classical Hodgkin lymphoma treated at our institute either with chemotherapy alone or combined modality treatment (CMT) utilizing chemotherapy and involved field radiotherapy

Patients and methods: This is retrospective descriptive study. All patients of early stage Hodgkin lymphoma from January 2004 to December 2013 retrospectively were studied. Patient's characteristics at presentation like Ann Arbor stage, histological type, sex, age, presence or absence of bulky disease, number of involved sites, ESR, extra nodal site involvement, presence or absence of B symptoms were noted. Number of cycles, type of chemotherapy, dose and field of radiation given were also recorded. Any evidence suggestive of significant acute or long term toxicity was also documented. Patients were divided in 2 groups based on whether they were treated with chemotherapy alone or combined modality treatment (CMT) comprising of chemotherapy followed by radiotherapy. Progression free and overall survival for both groups of patients was calculated using Kaplan Meier method and log rank test was used for comparison.

Results: Total number of patients was 101. Mean age of patients was 34 years. Males were 71.3% and 28.7% were femal. 46.5% were in stage IA and 53.5% stage IIA disease. Sixty three (62.4%) patients received CMT and 38 (37.6%) patients had chemotherapy alone. Ninety eight percent patients had ABVD chemotherapy. Dose of radiotherapy ranged from 20 to 36 gray. Patients treated with CMT had better overall survival compared to chemotherapy alone: 100% versus 91% at 5 years and 96% versus 81% at 10 years respectively (p=0.03). Progression free survival was also better with CMT against chemotherapy alone at 5 years (98% versus 81%) and 10 years (82% versus 71%) (p=0.01).

Conclusion: Early stage favourable risk Hodgkins lymphoma patients show significant overall survival and progression free survival when treated with combined modality treatment as compared to chemotherapy alone.

12

ACUTE PROMYELOCYTIC LEUKAEMIA - FROM BLAST TO BREEZE

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Acute promyelocytic leukaemia is the first malignant disease highly curable with targeted therapy directed at a unique molecular abnormality. The paradigm of treatment is changing with emergence of ATO as front line therapy. Now chemotherapy can be avoided and importantly maintenance may not be required. This 15 min presentation outlines the historic protocols with focus on changing paradigm to recent standard of care. This change has almost totally reversed the outlook especially in our country where most of the acute leukaemia patients will die during neutropenic period following induction chemotherapy.

13

PRACTICAL UTILISATION OF PREOPERATIVE ANAESTHESIA CLINIC

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Background: Preoperative anaesthesia clinic provides evaluation of the patient before the admission of patient for surgery whether patient is optimised or needs optimisation for anaesthesia.

Purpose:

1. To investigate the patients who underwent surgery from 1st July 2015 to 30th September 2015 with comorbidities including Hypertension, Diabetes Mellitus ,Ischemic Heart Disease , Asthma and whether they had been sent to preoperative anaesthesia clinic .
2. To investigate the patients who were scheduled for surgery and sent to preoperative anaesthesia clinic without any comorbidities.

Design:

Retrospectively analysed all patients that underwent surgery from 1st July 2015 to 30th September 2015.

Method:

Data for all patients was extracted using the local HIS system.

Sample. 1000 patients undergoing elective surgery both admitted and day cases between the age of 18–84 years were included.

Results:

Overall incidence of patients who were sent to preoperative anaesthesia clinic is 59%
Incidence in patients who were not sent to preoperative anaesthesia clinic having comorbidities is 10%.
Incidence in patients who were sent to preoperative Anaesthesia clinic with no comorbidities is 31.5%

Conclusion: In our institute SKMCH &RC these 10% of patients who were not sent to preoperative anaesthesia clinic with comorbidities can benefit and can be optimized in better way by sending them to preoperative anaesthesia clinic.

14

AUDIT ON ACCIDENTAL MIGRATION OF EPIDURAL CATHETER IN TUNNELED AND NON-TUNNELED.

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Aim: To audit the incidence of accidental migration and unscheduled removal of epidural catheters placed for postoperative analgesia, and to examine the effect of epidural catheter tunnelling (under the skin) on the accidental catheter migration.

Methods: An audit of all the epidural catheters inserted for analgesia during and after surgery, and looked after by anaesthetist and pain nurse in Operation theatre, Post Anaesthesia Care Unit and In-patient department. Some of the catheters were tunnelled, decision purely at the discretion of attending anaesthetist, while other catheters were not. The tunnelled and non-tunnelled catheters were fixed using transparent adhesive tape (Tegaderm TM). The Tegaderm dressing was further reinforced at edges and rest of the length of the epidural catheter with non-transparent adhesive taping leaving the site of insertion visible through the transparent dressing. Tunnelling was done 2-3 cm under the skin with the help of 16 G Cannula or Touhy needle. All the data collected on the proforma from the notes of the patients. The data has been transferred to and compiled after the audit duration to the SPSS TM 20.

Results: 185 epidural catheters were placed in the 3 months period, between 23rd of May 2015 and 21st of August 2015, in 96 female (51.9%) and 89 male (48.1%) patients. Among these 48 were Lumbar (25.9%) and 137 were thoracic (74.1%). Out of 185 epidural catheters 19 were tunnelled (10.3%) and 166 were non-tunnelled (89.7%). Overall incidence for accidental catheter dislodgement and unscheduled removal remained 17.8% out of 184 as one of the catheters had no documentation regarding elective or accidental removal. In tunnelled group the incidence of accidental dislodgement remained almost twice, 5 out of 19 (31.25%) as that of non-tunnelled which remained close to the overall incidence i.e. 28 out of 166 (16.86%). The mean number of days of epidural stay in the body remained 2.86 with S.D. of +/- 1.143, ranging from 1to 6.

Conclusion: Accidental dislodgement or migration of epidural catheters was the commonest cause of unscheduled removal of epidural catheters inserted primarily for postoperative pain relief. Tunnelling epidural catheters under skin had no effect on avoiding accidental removal. Our data has discrepant number in tunnelled versus non-tunnelled group which may have affected the overall results. Better documentation and further evaluation in different groups may yield more elaborate results. Further study needs to be conducted to determine the effect of tunnelling and overall impact on catheter migration and related complications.

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BROVIAC LINES IN MANAGEMENT OF CANCER PATIENTS: A SINGLE INSTITUTE, RETROSPECTIVE AUDIT.

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Background: Since 1979, when they were used by Hickman, the tunnelled Central Venous Catheters have become an important tool in management of cancer patients. Patients receiving Cancer treatment undergo regular infusions of irritant chemotherapy, need frequent transfusions, require frequent blood sampling for laboratory tests and stem cells for Bone Marrow Transplants. The use of tunnelled central venous catheters facilitates these procedures while sparing the patient from the anxiety and trauma of repeated venipunctures. However tunnelled central venous catheters carry the risk of both immediate and long term complications which range from mild complications e.g. bleeding and pain to severe and life threatening e.g. pneumothorax and sepsis.

Aims: We planned a retrospective audit to assess the indications, results and complications of Broviac Lines placed in our setup and compare them with international standards.

Methods: We analysed the medical records of all patients that underwent Broviac Line Insertion in our department from 1st January 2011 to 30th September 2015. The primary malignancy, indication for central catheter was noted along with size, site and number of lumen of central catheters. The immediate and late complications were documented and reason for removal and number of catheter days was calculated. The data was analysed to search for relationship between different factors.

Results: A Total of 284 Broviac Central Catheters was placed over a period of 5 years. The results of 246 catheters were analysed. 191 catheters (77.6%) were placed for chemotherapy, 53 (21%) for apheresis, 1 (0.5%) for difficult intravenous access and 1 (0.5%) for total Parenteral Nutrition. 28 patients died in the course of their treatment from other causes with their catheters still in place.

174 catheters (70.7%) were placed without any immediate complications. The immediate complications that did occur were mild and included more than one attempt, mild bleeding, difficulty in passing catheter and use of alternate site. 189 patients (76.8%) had no long term complications and Catheter was removed uneventfully or is still in place. The major long term complication was infection with 20 patients (8.1%) having positive line blood cultures while 17 patients (6.9%) had infection at exit site. Other long term complications included thrombosis (n=6, 2.4%), Catheter blockade (n=8, 3.3%), Catheter Breakage (n=7, 2.8%) and Catheter dislodgement (n=4, 1.6%)

The total number of catheter days was 30,907 (of 246 catheters). The mean number of catheter days was 138.5+/-118.2

Conclusions: The complication rate and number of catheter days in our setup is comparable to international standards. The long term infection rate albeit high may be due to the immunocompromised nature of our patient population and needs to be assessed further in detail.

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MORTALITY AND UTILIZATION OF CRITICAL CARE RESOURCES AMONGST HIGH-RISK SURGICAL PATIENTS AT SKMCH&RC

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Background: In SKMCH&RC, we deal mostly with cancer surgeries. This survey was done to describe a population of non-cardiac surgical patients at a high risk of complications and death. Outcomes are sub-optimal for such patients, perhaps in part related to inadequate provision or ineffective utilization of critical care resources. In this study, data describing 6000 in-patients non-cardiac surgical procedures performed at SKMCH&RC between January 2009 and December 2014 were extracted from local HIS.

Purpose: To describe a population of non-cardiac surgical patients at high risk of complications and death, and to investigate if it is related to inadequate provision or ineffective utilization of critical care resources.

Method: All the data was extracted from hospital local HIS. Retrograde data of admitted patients age>50years, underwent non-cardiac surgeries under general anaesthesia. Patients under age of 50years and with cardiac diseases were excluded, patients were ranked as high risk and standard risk according to there length of hospital stay and age greater than 50years.

Results : Of these 6000 patients 558(9.3%) were high risk with an overall mortality of 318(5.3%) patients .high risk patients with prolonged hospital stay(9-30 days) vs. standard risk (2-6 days). Mortality rate for specific surgeries were consistent with SKMCH averages. However only 195 (35%) high risk patients were admitted to critical care unit at any time duration after surgery. Of 318 high risk patients who died, 95(49%) were admitted to critical care unit at any point and only 48(25%) of these deaths occurred within a critical care unit area. Mortality rate were high amongst patients discharged and readmitted to critical care (20%) and amongst those admitted to critical care following initial postoperative care on a standard ward (12%).

Conclusion: These data suggest that the outcome of high risk oncological surgical patients can be improved by adequate provision and more effective utilization of critical care resources.

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ASSESSMENT OF SELECTION OF DOUBLE-LUMEN TUBE SIZE COMPARED WITH CHEST COMPUTED TOMOGRAPHIC SCAN MEASUREMENT OF LEFT MAIN BRONCHIAL DIAMETER

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Background: Methods to achieve lung separation have been available for more than 60 years. Selective collapse of a lung and one-lung ventilation (OLV) is now performed for most thoracic surgical procedures. Modern double-lumen endobronchial tubes have made lung separation safe and relatively easy to achieve. There are no objective criteria for selecting the size of a double-lumen endobronchial tube (DLT). An inappropriately sized DLT can cause airway trauma and interfere with oxygenation and lung separation during one-lung ventilation.

A properly sized DLT is one in which the main body of the tube passes without resistance through the glottis and advances easily within the trachea, and in which the bronchial component passes into the intended bronchus without difficulty. The most accurate method to select a left-sided DLT is to measure the left main bronchus diameter.

Aims: The goal of this audit is to determine if measurement of the left main bronchus diameter from the preoperative chest computed tomography can be used to predict which size DLT to choose for each patient undergoing thoracic, oesophageal, and vascular or mediastinal surgery at Shaukat Khanum Memorial Cancer Hospital & Research Centre, Lahore.

Methods: We did an audit to measure the diameter of left main bronchus from already available chest CT scans of patients who underwent thoracic surgical procedures from 1st January to 27th July 2015 and compared the selected DLT's' bronchial diameter size used for successful one lung ventilation. A data of 61 patients in the 7 months period was analysed.

Results: Analysis of data was done comparing the sizes of outer diameter of left main bronchus of the DLTs used with the patients' left main bronchus diameter as measured with the help of CT Scan. Out of 61 patients, 36 were males and 25 were females. One male patient was cancelled due to irresectability on CT scan, 2 male patients were intubated with endotracheal tubes. The result showed that 66% male patients were intubated with smaller size DLTs while 72% female patients were intubated with smaller size DLTs. Out of total 58 patients, 68% patients undergoing thoracic surgeries were intubated with smaller size DLTs.

Conclusions:

Since all the patients undergoing thoracic surgeries in SKMCH & RC have a preoperative chest CT scan, it is easier to measure the left main bronchus diameter for the correct selection of DLT size in order to achieve successful one lung ventilation

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COMPARISON OF NECK CIRCUMFERENCE TO THYROMENTAL DISTANCE RATIO WITH MODIFIED MALLAMPATI SCORE FOR PREDICTION OF DIFFICULT INTUBATION IN OBESE PATIENTS

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Aims: To compare neck circumference to thyromental distance (NC/TM) ratio and Mallampati score for prediction of difficult intubation in obese patients undergoing elective surgeries. To develop neck circumference to thyromental distance ratio as a common assessment test to be used routinely for prediction of difficult intubation.

Methods: Pre-operatively, the indices, NC/TM ratio and Mallampati score were carried out in 60 obese (BMI≥27.5 kg m−2) patients. Classification of the oropharyngeal view was done according to the Mallampati scoring and the Neck circumference and thyromental distance was measured in centimetres. Anaesthesiologists with a minimum of 12 months experience were assigned to perform laryngoscopy and intubation. Standard anaesthesia techniques were used with complete muscle relaxation to anaesthetize all patients. Macintosh laryngoscope blade size 3 or 4 was used to perform laryngoscopy with the patient in sniffing position. Cormack & Lehane classification was used to grade and record the laryngoscopic view. Number of attempts, number of operators and alternative techniques, if any, were noted. Lifting force of laryngoscope and laryngeal pressure, if applied, was recorded. Vocal cord mobility was assessed. Difficult intubation was independently associated with a modified Mallampati score of 3 or 4 and NC/TM≥5.0. All this information was collected and scored according to IDS (Intubation Difficulty Scale) where IDS≥5 was considered as difficult intubation. Data collection was done on an especially designed Proforma attached here with.

Results: Multivariate analysis revealed that the Mallampati score and NC/TM independently predicted difficult intubation in obese patients. Among these two indices, NC/TM showed a higher sensitivity and a negative predictive value, and larger area under the curve on an ROC curve.

Conclusions: Difficult intubation is common in obese patients and the NC/TM is a better method for predicting difficult intubation than other established indices. This study supports the use of assessing NC/TM preoperatively to predict a potentially difficult intubation as an easy and simple test. Several pre-operative airway assessment methods have been developed to predict difficult intubation or difficult laryngoscopy. Suggested predictors include high Mallampati score, increased age, male, short neck, Wilson score and history of Obstructive sleep apnea syndrome. However, none of these has high diagnostic sensitivity in anticipating difficult intubation particularly in the obese. W. H. Kim et al assumed that obese patients have a large amount of neck soft tissue that can be represented by the ratio of the neck circumference (NC) to Thyromental distance (TM). The aim of their study was to develop this as a new predictor for difficult intubation. They concluded that NC/TM had a sensitivity of 88.2% and was a better method for predicting difficult intubation than other established indices like Mallampati score which had a sensitivity of 58.8%. We, on the other hand, compared these two tests and concluded that NC/TM independently predicted difficult intubation in obese patients with a higher sensitivity and larger area under the curve.

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WHAT FACTORS ON ADMISSION INFLUENCE ICU MORTALITY IN ADULT PATIENTS ADMITTED TO THE INTENSIVE CARE UNIT WITH SEVERE PNEUMONIA?

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Objective: The objective of this study is to identity the risk factors on ICU admission that are linked with ICU mortality in patients with severe pneumonia.

Study Design:

We carried out a retrospective observational study.

Place and duration

Patients admitted to the medical intensive care unit in Shifa International Hospital, Islamabad, between October 2013 and March 2014.

Patients and Methods: Adult patients admitted to the ICU with the suspected diagnosis of severe pneumonia were studied. In addition to the co morbidities, presence or absence of septic shock and acute kidney injury, PaO2/FiO2 ratio and type of mechanical ventilation were recorded on ICU admission. This data was initially recorded on paper forms and latter entered in the SPSS. Bivariate analysis was performed to study the relationship between these risk factors and their effect on the ICU mortality.

Results: We evaluated a total number of 82 patients with severe pneumonia.ICU mortality was 14.8 % (12 patients). Statistical analysis showed that patients with severe ARDS, septic shock, history of chronic liver disease and HIV, neutropenic sepsis and those who received invasive mechanical ventilation were at higher risk of mortality. We did not find any direct correlation between age, presence of acute kidney injury, history of diabetes mellitus and risk of death in the ICU.

Conclusion: In adult patients, septic shock, severe ARDS, history of chronic liver disease, neutropenic sepsis and presence of HIV, and invasive mechanical ventilation is associated with a higher risk of ICU mortality in patients admitted with severe pneumonia.

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ASSESSMENT OF PATIENT'S UNDERSTANDING OF PCA USAGE AT THE TIME OF DISCHARGE

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Background: Pain control remains a major concern for patients undergoing surgery. Proper education for the patients regarding PCA usage can minimize the surgical complications, post-operative morbidity, un-planned admissions of day case patients, prolonged hospital stay and increases their quality of life.

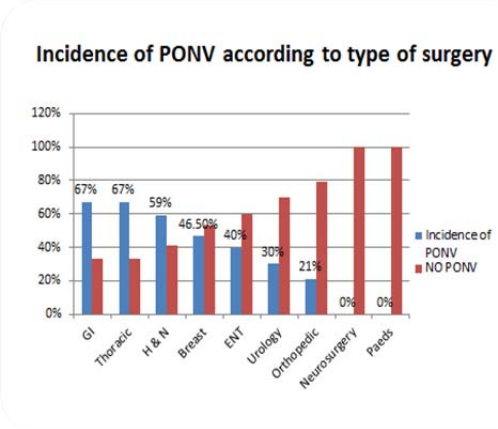
Aim: The goal of this study is to define the level of patient's understanding regarding the proper use of PCA at the time of discharge from the hospital, in post-operative population at SKMCH & RC.

Method: This was a retrospective survey over a period of 3 months from March 2015 to May 2015.

A Performa-based survey was carried out for the assessment of patient's education level in relation with PCA usage at the time of discharge. Survey was conducted during 3 months period from March to May 2015. 119 patients aged 12–86 years were included. The patient understands regarding PCA use was recorded for 72-hours postoperatively and at the time of discharge from hospital. Different factors used for correlation were gender, language and type of surgery etc.

Results: In the recovery room and then in IPD, the level of understanding regarding use of PCA in our patients was 99%. Level of understanding in female and male patients was same. And similarly the type of surgery had no bearing on the level of understanding. The minor gap of 1% was attributed to language barrier (Persian, Pashto etc.).

Conclusion: Overall understanding level of the patients regarding PCA usage is 99% in our institution. We need to improve departmental clinical practice by optimising the PCA education for both staff and patients on regular basis to provide quality patient care.



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INADVERTENT EPIDURAL CATHETER FALLING OUT

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Introduction: An epidural is one of the most commonly used methods for pain relief in postoperative surgical patients. We aim to provide multi-model analgesia to post-operative patients in which epidural remains the mainstay of analgesic provision. Inadvertent epidural migrating outward or falling out can potentially increase patient morbidity any may produce an unpleasant experience for both the patient and the anaesthetist.

Aim: The aim of this audit was to explore the factors related to epidural catheter accidently falling out.

Methodology: It was retro prospective audit. The total Number of patient who had inadvertent epidural catheter falling out was 43 in the three months period of March 2015 to May 2015. The reasons observed in epidural catheter accidently falling out were leakage from the catheter site, unsupervised mobilization in post-operative period, spontaneous peeling off dressing and others. It also include major surgeries such as urology, orthopaedics, G.I. and thoracic. These patients were observed as part of routine twice a day for epidural site and dressing condition.

Results: 13 patients had their epidural catheter accidently fall out on day one and also on day two. Number was 10 and 6 on day third and fourth respectively. Out of 43 patients, 39% belonged to G.I., 34% orthopaedics, 20% Urology and thoracic were 7%. During this audit, it was observed that there is a relation between type of surgeries and total number of day's epidural catheter was in place. On day one, there were 7 patients from orthopaedics and 4 from G.I. whereas there was only one thoracic patient. On Day two, there were 4 patients in both orthopaedics and G.I. Urology and thoracic had 2 patients each. On third day, G.I. had the highest number of patient that is 4 whereas orthopaedics and urology had same numbers of patients that is 3. On Day 4 and 5 all the cases belongs to G.I. The depth of catheter plays a major role in epidural catheter falling out.

Conclusion: 43 patients had their catheter migrate out of 150 patients that were studied in the audited period of three months. There is a pressing need to educate the patients and nurses regarding care of epidurals in postoperative period. The total number of catheter days and depth of catheter do play their role in inadvertent epidural catheter falling out. However, there are some catheter fixation devices that are commercially available which may significantly reduce catheter migration.

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AN AUDIT OF COMPLIANCE WITH COMPLETION OF ANAESTHETIC RECORD

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Background: Anaesthetic record is the sole document of anaesthetist's interaction with his or her patient. It contains information of the relevant pre op assessment, intra op anaesthetic administration and physiological data as well as the anaesthetist's orders for the immediate post op management. Department uses an anaesthesia form designed to meet the requirements of Punjab Healthcare Commission as well as our own needs. This audit was carried out to determine whether all components of the forms were completed in three hospitals serviced by Kaul Associates.

Material and methods: A retrospective cross sectional analysis of perioperative anaesthetic documentation was performed as a part of the process of quality assurance and audit. The anaesthetic records of all patients during the month of March 2015 were analysed. March was selected randomly to have a snapshot of documentation completeness. The statistical analysis was made using Microsoft Excel 2013. Total number of documented entries of each data field taken as numerator against the total sample size of that particular data field and percentage calculated. Total number of anaesthetic records of Hospital A was 665, of Hospital C were 298 and of Hospital B were 374.

Result: Overall adherence to the preoperative assessment was 83.97%, to intra operative record was 64.86% and to the post-operative record was 84.68%.

There was very inadequate record of anaesthesia and surgery starting time and anaesthesia and surgery ending time.

In summary, compliance to the guidelines in Hospital B was 77.83%, in Hospital A was 94.24% and in Hospital C it was 92.76%. As a whole, the department compliance noticed to be 88.27%.

Conclusion: The audit gave us an insight into our documentation process that will help us improve the process.

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IMPLEMENTATION OF DRUG HANDLING PROTOCOL – A STEP FURTHER TOWARDS PATIENT SAFETY

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Background: Medication error is a major cause of morbidity and mortality in anaesthesia and critical care and most of them are related to drug handling.

A Four-step drug handling protocol was introduced in our department 2013, with the objective of minimizing these errors. The steps were documented as step 1, 2, 3, 4 in anaesthetic Performa. These were filled as yes or no for each step at the end of surgery. This part was to be signed by the consultant to confirm the steps were followed.

Objectives: The objectives of our study were

1. To determine the compliance of drug handling protocol by residents and consultants.
2. To compare the incidence of errors related to drug handling before and after the implementation of drug handling protocol

Material & Methods: It was an observational study conducted in three hospitals including Hameed Latif Hospital, Doctors Hospital and Medical Centre and National Hospital, Lahore. Number of critical incidents related to drug error in our hospitals was checked 2 years before and 2 years following the implementation of drug handling protocol from our critical incident registers.

A knowledge, attitude and practice survey was conducted among residents and consultants, using a specially designed questionnaire.

Results: Incidence of drug related errors decreased (from 0.06% to 0.04% Odds Ratio =1.499) following implementation of the protocol. Majority of drug errors were related to wrong drug administration (42%) and wrong dose administration (21%) both before and after the drug handling protocol implementation.

Compliance of drug handling protocol following was found to be improved from 81.5% to 85% on an average among residents and from 73.4% to 85.3% among consultants from year 2014 to year 2015.

Conclusion: We suggest an addition of the step of "two person check" at the time of administration of drugs and the drug name and dosage should be announced before they injected. Awareness among residents about careful drug handling by incorporation of drilling sessions and encouraging the culture of reporting every drug error will help reducing drug errors and will improve patient's safety.

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WORKPLACE STRESS SURVEY; STRESS AMONG MEMBERS OF A DEPARTMENT OF ANAESTHESIOLOGY

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Background: Stress is one's response to environmental pressures and demands. It has both negative and positive aspects and can markedly affect one's performance. Anaesthesiology is known to be one of most stressful medical profession due to various reasons.

Objective: The purpose of this survey was to determine how well the members of our anaesthesiology department are coping with stress and what are the reasons behind being stressed.

Method: A standardized questionnaire was used and filled by 68 members. Data was analysed and categorized into subgroups and percentages were calculated to assess level of stress among residents of various years, senior registrars, senior consultants and professors. Data was further evaluated for most common reasons of stress among members.

Results: Results showed that 4th year residents are most stressed and senior consultants were least stressed. Most common reason of stress in our department was job interference with family and social obligations. However further follow up surveys are required to analyse

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INVESTIGATION OF HEAD AND NECK RADIOTHERAPY TECHNIQUES USING THREE DIMENSIONAL DOSIMETER

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Purpose: The purpose of this analysis was to investigate dose distribution of different techniques

(3DCRT, IMRT and VMAT) for Head and Neck cancer using 3-Dimensional PRESAGE® dosimeter.

Materials and Method: Computer tomography (CT) scans of radiological physics centre (RPC) Head and Neck anthropomorphic phantom with both RPC standard insert and PRESAGE® insert were acquired separated with Philipp's CT scanner and both CT scans were exported via DICOM to the Pinnacle treatment planning system(TPS). Each plan was delivered twice to the RPC phantom first containing the RPC standard insert having TLD and film dosimeters and then again containing the PRESAGE® insert having 3D dosimeter (PRESAGE®) by using a Varian True beam linear accelerator. After irradiation, the standard insert including point dose measurement (TLD) and planner GafChromic® EBT film measurement was read using RPC standard procedure. The 3D dose distribution from PRESAGE® was read out with the Duke Midsized optical scanner dedicated to RPC (DMOS-RPC) . Dose volume histogram (DVH), mean and maximal doses for organ-at-risk (OARs) were calculated and compared among each Head and Neck technique. The prescription dose was same for all Head and Neck radiotherapy techniques which was 6.60 Gy per friction. Beam profile comparison and gamma analysis were used to quantify agreement among film measurement, PRESAGE® measurement and calculated dose distribution. Quality assurances of all plans were performed by using ArcCHECK method.

Results: VMAT delivered the lowest mean and maximal doses to organ at risk (spinal cord and parotid) than IMRT and 3DCRT. Such dose distribution was verified by absolute dose distribution using thermoluminescent dosimeter (TLD) system. 2D gamma 5% / 3mm criteria of Pinnacle vs. EBT2 film 3DCRT (92.34%), IMRT (92.3%) and VMAT (96.63%) in axial plan respectively. It was also found that agreement between PRESAGE® and pinnacle along the axial , sagittal and coronal plans VMAT agreement was better than IMRT and 3DCRTplan excludes a 7mm rim at the edge of the dosimeter using 2D gamma map criteria (±5%/3mm) with 5% threshold dose. Profile showed good agreement for all plans between film, PRESAGE® and pinnacle. 3D gamma was performed for PTV and OARs, VMAT and 3DCRT endow with better agreement than IMRT.

Conclusion: VMAT delivered lowered mean and maximal doses to organ at risk and better PTV coverage. TLD, EBT film and PRESAGE® dosimeter has suggested that VMAT would be superior modality for the treatment of Head and Neck cancer than IMRT and 3DCRT

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SELECTIVE VERSUS RADICAL LYMPH NODE DISSECTION FOR PAPILLARY THYROID CANCER WITH CERVICAL LYMPH NODE METASTASES

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Introduction: Papillary thyroid cancer (PTC) is frequently associated with metastasis to cervical lymph nodes (CNLM). Nodal involvement increases recurrence rate and affects the quality of life and prognosis. We studied our institutional experience in management of PTC with CLNM and compared patients who underwent radical compared to selective lymph node dissection.

Methods: Retrospective chart review of patients with PTC and CLNM was performed. Data regarding demographics, clinical and operative detail, follow-up and recurrence was collected. SPSS V 19 was used for analysis.

Results: Between 1997 - 2014, 127 patients with PTC and CLNM underwent neck dissection. Bilateral neck dissection performed in 20 patients. Radical dissection was performed in 83 necks and selective neck dissection was performed in 54 necks. Median follow-up duration was 52.5 months. The number of lymph nodes retrieved was higher in radical dissection group. There was no statistically significant difference in hospital stay, complications, readmissions, re-interventions, recurrence, and mortality between the two groups.

Conclusion: Our institutional experience suggests that selective neck dissection can be performed for PTC with CLNM with comparable operative and oncological outcomes to radical neck dissection.

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ASSOCIATION OF UNIFOCAL, MULTIFOCAL AND MICRO-PAPILLARY THYROID CANCER WITH TUMOR RECURRENCE IN PATIENTS TREATED WITH TOTAL THYROIDECTOMY ALONG WITH RADIOACTIVE IODINE ABLATION AND TSH SUPPRESION

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Introduction: Papillary thyroid cancer PTC has three different histological patterns with multifocal, unifocal and multifocal micropapillary. However, the association of focality with prognosis remains controversial.

Objectives: The aim of this retrospective study is to determine occurrence of true micro-papillary and multifocal thyroid cancer among our PTC patients managed with total thyroidectomy and to evaluate the association between focality and prognosis in terms of tumour recurrence.

Methods: Out of a cohort of 300 pts of papillary thyroid cancer managed surgically at our institute from Jan 1995 to June 2013, patients with a complete medical record for their initial and final histopathology reports were evaluated thru our hospital medical record system (HIS) and archived charts. Patient demographic characteristics like age, gender, initial diagnostic modality were recorded along with other variables for tumour characterization i.e.; T and N stage, surgery performed and post-operative treatment given. Patients were grouped according to tumour focality into either uni focal or multifocal PTC with size of tumour foci > 1cm, and micro-papillary with a size of <1cm for all tumour foci. Primary end point is tumour recurrence in each group. Recurrence was documented into locoregional by evaluation of positive disease in neck on radioactive iodine scans at year l and ll. Secondary end point was assessment of the benefits of completion surgery in each group through evaluation of tumour residue (size, focality and laterality) in second surgery.

Results: Out of a total of 215 cases fulfilling inclusion criteria, 52.1% were unifocal, 29.3% multifocal and 18.6% micropapillary carcinomas, while the true percentage of multifocal micropapillary was only 11.2 percent. The three groups were found to be homogenous in terms of basic demographic and final pathological characteristics ($p>0.05$). After controlling results for tumour laterality, and T and N tumour stage, the rate of tumour recurrence over a mean follow-up of 2.8 years was 27.7 % in unifocal, 49.2% in multifocal papillary and 47.5 % in case of micropapillary thyroid cancer. Rate of metastatic recurrence was 5% for micropapillary cancer overall while it was 0% and 8.3 % for unifocal micropapillary and multifocal micropapillary respectively, and 11.1 % in multifocal and 6.3 % in unifocal PTC. In patients with an initial lobectomy followed by a completion thyroidectomy at our hospital with opposite side hemithyroidectomy , 25% of time the tumour focality changed from unifocal at 1st surgery to multifocal after completion.

Conclusion: Analysis of our data showed that with a standard uniform treatment, the recurrence rate is lowest for unifocal PTC and it is even lower for <1cm unifocal micropapillary cancer with a 0% metastatic rate. Similarly rate of overall and metastatic tumour recurrence in multifocal micropapillary and true multifocal PTCs are comparable. Hence micropapillary carcinomas are more representatives of early stage of unifocal and multifocal papillary rather than an individual subgroup. Moreover, determination of true focality and hence clear prognosis requires total thyroidectomy.

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PATTERNS OF FAILURE AFTER DEFINITIVE RADIATION THERAPY FOR OROPHARYNGEAL CANCER – SHOULD P16 STATUS AND TUMOR GROWTH RATE ALTER THE CLINICAL TARGET VOLUME?

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Purpose: To map patterns of failure after definitive radiation therapy (RT) for oropharyngeal cancer (OPC) and optimize clinical target volume (CTV) expansions via P16 status and primary tumor growth rate (TGR).

Methods/Materials: 103 OPC patients with known p16 status, smoking pack-years, and TGR (defined as percent volume growth/day) managed with (chemo) radiation (CRT) were analyzed. Diagnostic CT scan images of patients with locoregional failure (LRF) were imported into a commercially available contouring system and fused with the radiation treatment planning scan dose distribution using deformable registration. The distance of the LRF from the edge of radiation prescription volume (RxV) was recorded. Typical CTV expansions were 8-10mm plus 3mm for the planning target volume. Cox proportional hazards model was used to estimate the risk of disease recurrence.

Results: Median TGR was 0.74%/day (range 0.01-5.5). Median follow up was 30 months (range 0.5-80). 92% were treated with CRT. On multivariate analysis, negative p16 status (HR 3.4, 95%CI 1.4-8.3) and increasing TGR (HR 4.8, 95%CI 1.6-14.5) were the strongest predictors of recurrence. Patterns of failure according to RTOG 0129 risk group, stratified by median TGR are shown in the table.

0129 Risk Group	TGR < 0.74% (n=51)		TGR> 0.74% (n=52)	
	LR Failure	Distant Failure	LR Failure	Distant Failure
Low (n=52)	0/30	1/30	1/22	2/22
Intermediate (n=33)	0/18	1/18	4/15	3/15
High (n=18)	0/3	1/3	10/15	3/15

14 of 15 patients with LRF had evaluable failure scans and plans. A majority of failures (11/15, 73%) were marginal to high dose radiation prescription volume (i.e. the failure volume both in and out of the treated volume). Four patients had LRF completely within the high dose RxV. The median distance of the furthest extent of the recurrence from the field edge was 7 mm; the distance from the RxV edge to encompass the LRF ranged from 0-20mm. 80% of failures would have been covered by an expansion of an additional 12mm outside of the RxV; 3 patients experienced LRF beyond 15mm outside of the high dose RxV.

Conclusion: Locoregional failures in low risk, slow growing OPC tumours are rare, such that reductions in CTV margins may be justified in the interest of reducing potential toxicity. The dominant pattern of failure in intermediate and high-risk tumours appears to be marginal to the high dose prescription volume, predominantly in tumours with increased TGR. Investigation of altered CTV expansions based upon RTOG 0129 risk group and TGR appears warranted.

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TRACE METALS CONCENTRATION IN PATIENTS WITH ORAL CANCER BY ATOMIC ABSORPTION SPECTROSCOPY

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Objectives: The present study was designed to investigate the concentration of trace metals in patients with the occurrence of Oral cancer as compared with the healthy control subjects.

Methodology: For the determination of trace metals sixty persons were included in this study and divided into three groups; 20 persons with a history of intake gutkha with the occurrence of Oral cancer, 20 persons with a history of intake gutkha without Oral cancer, 20 healthy controls without any complications. Serum concentration of trace metal including copper, iron, magnesium and zinc were determined using atomic absorption spectrophotometry.

Results & Conclusion: This study reported a significant difference in the serum trace metals concentration in patients with a history of intake gutkha as compared with the healthy control subjects. Concentration of trace meals in serum may use as prospective extrapolative and indicative implement in Oral cancer. Further studies with greater sample numbers are necessary to confirm these findings.

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ROLE OF NEOADJUVANT CHEMOTHERAPY IN ADVANCED UNRESECTABLE ESTHESIONEUROBLASTOMA: A CASE SERIES

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Objectives: To analyse the impact of neoadjuvant chemotherapy on locally advanced unresectable esthesioneuroblastoma

Methods and Material: This is a retrospective study of four patients of unresectable esthesioneuroblastoma evaluating the impact of neoadjuvant chemotherapy. This retrospective study evaluates the impact of neoadjuvant chemotherapy in locally advanced unresectable esthesioneuroblastoma patients treated between January 2011 and November 2013, in a tertiary care cancer centre in India. Data from a prospectively filled database were analyzed for patient characteristics, chemotherapy received, toxicity, response to chemotherapy, treatment offered, and overall survival.

Statistical analysis used: Nominal data presented as numbers (percentages) and continuous data as median (range).

Results: Four patients of Modified Kadish Stage C esthesioneuroblastoma were treated with etoposide and cisplatin based NACT. Partial response was achieved in three patients. 3 patients underwent curative intent therapy: 2 underwent surgery (R0 resections) and 1 received radical concurrent chemoradiotherapy. 1 patient was noted to have a complete pathological response. Grade 3/ 4 toxicity was seen in one patient.

Conclusion: Neoadjuvant chemotherapy with etoposide and cisplatin is effective in locally advanced unresectable esthesioneuroblastoma where upfront R0 resection is not possible.

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EPIGENETIC AND GENETIC ANALYSIS OF CELL SIGNALING PATHWAY GENES: RELATIONSHIP WITH SQUAMOUS CELL CARCINOMA.

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Purpose/Objectives: Squamous cell carcinoma (SCC) is among the most common type of cancers. Cancer is recognized as a genetic and epigenetic disease that is being extensively studied to understand the complexity and diversity of the disease. The genetic alterations such as identification of individual gene mutations or polymorphisms have been extensively reported in various types of cancer. The epigenetic alterations include DNA methylation and histone deacetylation. DNA methylation is one of the most studied epigenetic modifications, which alters the genes by affecting their expression. The aim of the study is to analyse the epigenetics and genetics alteration of cell signaling pathway genes and their association with the various squamous cell carcinomas.

Material/methods: Peripheral blood samples of squamous cell carcinoma patients and controls were collected with informed consent from local hospitals of Karachi. A total 300 patients of squamous cell carcinoma and 300 normal control subjects will be included in this study. Epigenetics and genetic mutations of cell signaling pathway genes will be investigated by DNA extraction, bisulfite modification, polymerase chain reaction, restriction fragment length polymorphism (RFLP) and directly DNA sequencing.

Results: The results will be analysed by using bioinformatics statistical tools and will be compared with controls. Epigenetic and genetic alteration(s) might be found in the genes of cell signaling pathway in squamous cell carcinomas.

Conclusion: This study may increase our understanding of the molecular basis of squamous cell carcinomas and establish whether different precancerous subtypes show different growth characteristics. By giving an insight into the processes of Squamous cell carcinoma development, the understanding of epigenetic and genetic information might be translated into clinical benefit in squamous cell carcinoma as biomarkers.

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BASELINE STIMULATED THYROGLOBULIN LEVEL AS A GOOD PREDICTOR OF SUCCESSFUL ABLATION AFTER ADJUVANT RADIOIODINE TREATMENT FOR DIFFERENTIATED THYROID CANCERS

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Purpose/objectives: To determine the predictive value of the baseline stimulated thyroglobulin (STg) level for ablation outcome in patients undergoing adjuvant remnant radioiodine ablation (RRA) for differentiated thyroid carcinoma (DTC).

Materials and Methods: This retrospective study accrued 64 patients (23 male and 41 female; mean age of 40±14 years) who had total thyroidectomy followed by RRA for DTC from January 2012 till April 2014. Patients with positive anti-Tg antibodies and distant metastasis on post-ablative whole body iodine scans (TWBIS) were excluded. Baseline STg was used to predict successful ablation (follow-up STg <2 ng/ml, negative diagnostic WBIS and negative ultrasound neck) at 7-12 months follow-up.

Results: Overall, successful ablation was noted in 37 (58%) patients while ablation failed in 27 (42%). Using the ROC curve, a cut-off level of baseline STg level of ≤14.5 ng/ml was found to be most sensitive and specific for predicting successful ablation. Successful ablation was thus noted in 25/28 (89%) of patients with baseline STg ≤ 14.5 ng/ml and 12/36 (33%) patients with baseline STg >14.5 ng/ml ((p value <0.05). Age >40 years, female gender, PTS >2 cm, papillary histopathology, positive cervical nodes and positive TWBIS were significant predictors of ablation failure.

Conclusions: We conclude that in patients with total thyroidectomy followed by I-131 ablation for DTC, the baseline STg level is a good predictor of successful ablation based on a stringent triple negative criteria (i.e. follow-up STg < 2 ng/ml, a negative DWBIS and a negative US neck).

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THE ROLE OF DUAL ENERGY CT AND ENDOSCOPIC ULTRASOUND IN THE PREOPERATIVE STAGING OF RESECTABLE PANCREATIC CANCER

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Introduction: It is important to identify patients with locally advance disease with pancreatic tumours in order to avoid unnecessary surgery. Staging CT scan is routinely performed in our centre for all patients with a diagnosis of pancreatic tumours. Similarly EUS is used not only as an adjunct to staging but also for fine needle aspiration cytology to confirm the diagnosis. We compare the results of both modalities for preoperative staging in pancreatic or periampullary tumours in our study.

Methodology: We retrospectively reviewed the medical case notes of 71 patients with pancreatic head/peri-ampullary lesions deemed resectable by CT and EUS who underwent Whipple procedure at our hospital from 2007 to 2015. Patients with known metastatic disease or vascular involvement were excluded from the study. Patients in this study underwent CT and EUS for staging and evaluation of surgical resectability and the results were compared with intraoperative findings and histopathology in resectable cases. Patient demographics and histopathological findings were also taken into account when analysing the results. All the data was analysed with SPSS 20 and Wilson score test was applied.

Results: 71 patients were identified over the 9 years period, 27 had surgery in last 12 months and remaining 44 in previous 8 years. Out of total 71 patients who underwent surgery, 5 (7.04%) were found to be irresectable per-operatively. DECT was done for all of them and EUS was done in 67 patients with 49 (69%) males and 22 (31%) females. For resectability, EUS sensitivity was 90.91% and specificity was 79.35%. DECT showed lower sensitivity than EUS for resectibility (73.61% vs. 90.91%) but the specificity (90.55%) was more as compared to EUS (79.35%). The positive predictive value for EUS was 98.36% as compare to DECT 100% which is comparable in both imaging techniques. The diagnostic accuracy for EUS is 89.55% and is better than DECT which came out 73.97%.

Conclusion: EUS is an accurate and better investigation tool than DECT in the pre-operative local staging for resectable pancreatic head/ peri-ampullary cancers.

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COMPARISON OF MDCT AND PET-CT IN INTIAL STAGING OF NON SMALL CELL CARCINOMA OF LUNG

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Background: Lung cancer remains the leading cause of cancer related deaths, with a dismal 5-year survival rate of 15%. Due to the lack of available data, the true incidence of lung cancer is not known in Pakistan. However, The Prevalence of lung cancer is continuously increasing in Pakistan due to wide spread smoking epidemic. Lung cancer is classified as either non–small cell or small cell lung cancer, with the former accounting for 87% of all lung cancers.

Objective: The objective of this study is to determine the frequency of patients with non-small cell lung cancer in whom the initial staging on MDCT was changed with PET-CT.

Methodology: This cross-sectional study was conducted in Department of Radiology, Shaukat Khanum Memorial Cancer Hospital and Research Centre, (SKMCH & RC) Lahore, Pakistan. The sampling was done on the basis of non-probability; consecutive sampling method. The patients with biopsy proven non-small cell lung cancer of all ages and both genders were included in the study. All the patients included had no history of prior treatment. As part of institutional protocol the initial stage of the patient with lung cancer was assessed with multidetector computed tomography (MDCT) followed by biopsy and PET-CT.

The data analysis was carried out using computer based Statistical Package for Social Sciences (SPSS) 17 version. Quantitative variables such as age were presented in the form of mean + S.D. Qualitative variables such as gender and patients in whom there was a change of stage after PET- CT were presented using percentage and frequency.

In this study, there were 86 patients included according to the calculated sample size. The mean age of patients was 67 + 17.16 years. The minimum and maximum age was 41 years and 87 years respectively, (Range = 46). There were 74 (85.71%) male and 12 (14.29%) females. These patients were biopsy proven cases of Non-small cell carcinoma of lung on CT guided lung mass biopsy, 19 (22.1 %) patients had upstaging of disease with PET/CT and 1 (1.16 %) had down staging disease with PET/CT and remaining 66 (76.74 %) patients had no change in staging with PET/CT. The total change in treatment was observed in 20 (23.25 %) patients.

Conclusion: MDCT is quite reliable for initial work up of patients with non-small cell carcinoma of lung. Preoperative staging with PET-CT identifies more patients with mediastinal and extra thoracic disease than conventional staging, in less than quarter of the patients facilitating curative surgical treatment.

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TRANSRECTAL ULTRASOUND (TRUS) GUIDED PROSTATE BIOPSY: AN EVIDENCE BASED REVIEW OF THREE CONSECUTIVE AUDIT CYCLES AT SHAUKAT KHANUM MEMORIAL CANCER HOSPITAL AND RESEARCH CENTER

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Background: Prostate carcinoma (PCa) is one of the most common malignancies among men. Prostate cancer is the second leading cause of cancer death in men. One in seven men will get prostate cancer during his lifetime and one man in 38 will die of this disease.

Purpose: This review of three consecutive audit cycles of transrectal ultrasound guided biopsies provided crucial information that helped to decrease the number of negative and unnecessary prostatic biopsies in our practice.

Material and Method: In first audit cycle (2006-2007) 74 patients were studied, followed by 208 and 152 patients in next two consecutive audit cycles respectively from 2011 to 2014. Transrectal ultrasound examination followed by biopsy was carried out in ultrasound suite of radiology department of SKMH and RC. Results and recommendations of three consecutive cycles of transrectal biopsies were compared with their impact.

Results: Comparative analysis of audit cycles shows the successive improvement in detection of prostatic malignancy at our institution with reduction in rate of negative biopsies. The cases positive for prostatic malignancy at the end of first cycle were 37 % whereas as the percentage of positive biopsies rose up to 67 % by the end of third cycle of audit.

Conclusion: Evidence based formulation of departmental criteria regarding referrals and the repeat biopsy improves detection of prostatic cancer. Number of biopsies in proportion to the volume of prostate enhances the detection of prostatic malignancy.

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THE ADDED VALUE OF SPECT/CT OVER PLANAR SCINTIGRAPHY IN DETECTING SENTINEL LYMPH NODE IN EARLY STAGE BREAST CANCER PATIENTS – A PROSPECTIVE ANALYSIS

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Purpose: To determine the added benefit of SPECT/CT in pre-operative axillary sentinel lymph node localization in early stage breast cancer patients where planar scintigraphy results are equivocal or negative.

Method: Prospective analysis of early stage breast cancer patients [Ductal Carcinoma in-situ (DCIS)/T1/T2] with non-palpable axillary nodes referred for sentinel lymph node (SLN) localization prior to nodal biopsy for axillary nodal staging. On the basis of planar scintigraphy, cases were categorized as Category A: non-visualization of SLN; Category B: unusual location of tracer uptake; Category C: equivocal results with faint tracer uptake/difficult to interpret/suspicion of contamination; Category D: post lumpectomy cases.

Kappa statistics are applied to determine the agreement between planar scintigram and SPECT/CT.

Results 110 patients were enrolled during a 21-month period between January 2014 and September 2015. All were females. Mean age 48.15 years; age range 26 to 82 years. Right breast cancer in 58, left in 50 and bilateral in 2 cases. By TNM classification: 37 were T1, 67 T2 and 6 had DCIS/ Paget's disease.

Out of 52 category A patients, SPECT/CT localized SLN in 33 and failed to localize SLN in 19. Of 18 category B patients, SPECT/CT localized tracer uptake to 17 level I, 9 level III and I, 3 level II / internal mammary nodes. Out of 32 category C patient, SPECT/CT confirmed SLN in all the cases. Of 30 category D patients, 11 showed nodal uptake on planar as well as SPECT/CT; 12 showed equivocal results on planar scintigram, which was appropriately localized to nodes on SPECT/CT. 7 were negative on planar; of which SPECT/CT failed to localize a SLN in 4.

Overall agreement between planar scintigram and SPECT/CT calculated by kappa value – 0.15 (mild agreement).

Conclusion: SPECT/CT has value in sentinel node localization especially in difficult cases. As SPECT/CT adds anatomical information to tracer uptake with minimal extra radiation exposure, we can provide precise information for pre-surgical planning.

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SURVIVAL BENEFIT OF TRANSARTERIAL CHEMOEMBOLIZATION FOR HEPATOCELLULAR CARCINOMA

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Background: Transarterial chemo-embolization (TACE) is a palliative treatment option for hepatocellular carcinoma (HCC) with improved patient survival. The aim of the study was to see the outcome of our patients at SKMCH & RC 2 years post TACE

Patients and Methods: Electronic records were retrospectively reviewed for patients who had TACE from 1st November 2009 – 31st October 2012. Baseline imaging, multidisciplinary team (MDT) and clinical notes, pathology labs, TACE angiograms and follow up imaging was reviewed for 2 years after first TACE. Procedure complications, clinical status and findings at follow up CT were reviewed and analysed in SPSS version 19. Survival was assessed using Kaplan Meier curves.

Results: A total of 104 patients had TACE for HCC. Amongst these 21 patients could not be contacted to reconfirm the outcome and had to be excluded. Amongst the included 83 patients, 57 (68.7%) were male and 65(78.4%) were 51-70 years of age at time of first TACE. The commonest cause for HCC was HCV in 74 (89.2%) patients. Target lesion size at baseline CT was <5cm in 38(45.8%) patients, 5-10cm in 37 (44.6%) patients and >10cm in 8(9.6%) patients. A total of 25(30%) patients needed more than 1 session of TACE. On post TACE CT, 46 (55.4%) patients had good packing of lipoidol in the lesion.

Only 8(9.6%) patients had liver failure after TACE and 1 patient had hepatorenal syndrome. Only 1 patient died within 30 days after TACE.

Two years post TACE, 49(59%) patients were alive indicating good outcome.

Conclusion: TACE improves survival in HCC.

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DIAGNOSTIC ACCURACY OF MAGNETIC RESONANCE IMAGING INPREDICTING RESPONSE TO NEOADJUVANT THERAPY IN PATIENTS WITH LOCALLY ADVANCED RECTAL CANCER

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Background: Magnetic Resonance Imaging (MRI) of pelvis is the imaging modality of choice for the preoperative staging in rectal cancer. Neoadjuvant therapy is used in locally advanced rectal cancers and assessment of response in this situation can be difficult due to the treatment related changes. We aim to look at the accuracy of MRI in evaluating response to neoadjuvant therapy.

Materials and method: Medical records of patients undergoing surgery for rectal cancer following neoadjuvant therapy at our institution in the year 2014 were reviewed. Data was collected regarding T and N stage on MRI at presentation, after neoadjuvant therapy and on histopathology of resected specimen. Concordance of post-treatment MRI and histopathology was evaluated. Factors that might affect this concordance were assessed in univariate analysis.

Results: A total of 106 patients underwent surgery for rectal cancer after neo-adjuvant therapy in 2013-14. Most of these had T3 or above tumour (97%) or nodal involvement (95%) on MRI at presentation. Following Neoadjuvant Therapy, Post-treatment MRI scan showed downstaging in 35% of Tumours and 52% of Nodal status. The concordance between MRI and histopathology was 64% for T stage and 57% for N stage. No specific factor could be identified to be significantly associated with this concordance. The statistical accuracy of Post treatment MRI was 80% for diagnosing T0, 83% for T3, 88% for T4, 62% for N0 and 81% for detecting N2 disease.

Conclusion: Although post treatment changes result in limitation of MRI to evaluate response to treatment as shown by 57 – 64% concordance between MRI and histology, MRI shows acceptable statistical accuracy in predicting advanced disease (T3,T4, N2) rendering it the preferred modality in detecting poor treatment response.

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INCIDENTAL FINDINGS ON PET/CT EVALUATION FOR SECOND PRIMARY MALIGNANCIES

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Purpose: The aim of the study is to review suspicious, incidental FDG avid findings on PET/CT scan and evaluate the likelihood of a second primary malignancy.

Materials and Methods: Retrospective review of all PET/CT reports acquired between January 2010 to June 29, 2015 using electronic Hospital information system (HIS) in patients with suspicious FDG avid focus which appeared unrelated to the primary malignancy.

Results: A total of 12134 PET/CT scans were done in the defined 54 months period which reveal incidental, suspicious uptake in forty four (0.36 %) patients. Age range: 8 to 86 years. Among primary malignancies Lymphoma = 10, Oesophageal = 8, Lung = 5, Head and neck=5, Gynaecological=5, colon=2, others=11.

Of the 46 suspicious findings based on appropriate clinical, radiological and histopathological correlation 21 (48%) were classified as definite malignant, 20 (45%) were probably malignant but further work up was not undertaken due to disease status, two were found to be related to primary disease process and one was artefactual due to mis-registeration

Abnormal findings suspicious for second primary malignancy involved in gastrointestinal tract = 18 , Thyroid= 9, Lymphoma = 4 , Lung =3 , renal = 3 Head & Neck = 2, Bladder = 2 , Others = 5.

SUV values of abnormal findings ranges from 2.0 to 19.3

Conclusion: Suspicious incidental findings on PET/CT should be carefully assessed for the possibility of a second primary malignancy as close to 50% of such finding were proven to be synchronous second primary malignancies.

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COMPARATIVE STUDY OF CORE NEEDLE BIOPSY AND FINE NEEDLE ASPIRATION BIOPSY IN PATIENTS UNDERGOING PERCUTANEOUS CT GUIDED BIOPSY FOR LUNG MASSES: THE DIAGNOSTIC YIELD AND COMPLICATION RATES COMPARED

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Aim. The objective of this study was to compare fine-needle aspiration biopsy (FNAB) with core-needle biopsy (CNB) alone and both when done in combination for diagnostic yield of the sample. The complication rates were also compared for each group of patients.

Method: All patients undergoing CT-guided biopsy performed at Shaukat Khanum Memorial Cancer Hospital between 01/01/2014 to 31/12/2014 (12 months) were included in the study. The complication rate, adequacy and the success of tumor sub-typing and analysis of predictive markers were assessed. For FNAB's 22 G Chiba needles and for core biopsies 20 G Temno needles were used. The samples were sent for cytological and histological analysis. The results were then compared. Eighty-four patients (54 males; 30 females) with mean age of 57 years (13–84 years) were included in the study. CT guided biopsies of lung lesions were performed on 16-slice Alexion CT equipment. Adequate samples for diagnosis were obtained in 70 patients (84%). Sixteen patients (19%) had pneumothorax, of which only one patient underwent chest intubation. Mild hemoptysis was observed in two patients not requiring medical management. There were no fatalities. NSCLC was diagnosed in 46 patients of which adenocarcinoma found in 23 patients (43%), squamous cell carcinoma – 22 (47%), small cell carcinoma - 2 (4%), metastases - 2 (2%), tuberculosis - 10 (12%), inflammatory yield – 10 (12%), fungal – 3 (3%). 12 patients (14%) had insufficient samples and one patient had malignant neoplasm with low biopsy yield.

Results: Sensitivity, specificity, diagnostic accuracy, diagnostic yield of FNAB and CNB of lung lesion was determined individually and in combined procedures. The study also focuses on the comparison of the diagnostic yields of FNAB and of CNB for molecular predictive-marker studies in patients with lung lesions. In patients undergoing FNAB only, the cytological samples were adequate for definitive diagnosis in 20 / 24 patients (83.3 %) and inadequate in 4 / 24 patients (16.5 %). Core biopsies samples were adequate in 30 / 30 (100 %) patients and non- representative in none of the patients. Pneumothorax as the most frequent complication was detected in 10 patients undergoing combined CNB and FNAB, 2 of the patients in the group of FNAB's and 4 of the patients with the core biopsy group. Sensitivity, specificity and diagnostic accuracy of FNAB and CNB of lung lesions was determined individually and in combined procedures. The study also focuses on the comparison of diagnostic yields for molecular predictive markers. In patients undergoing FNAB only, the cytological samples were adequate for definitive diagnosis in 20/24 patients (83.3 %). Core biopsies were adequate in 27/30 (90 5) patients. Samples for combined FNAB and CNB were adequate in 25/30 (83 %) patients. Pneumothorax as the most frequent complication was detected in 10 patients undergoing combined FNAB and CNB, two for FNAB, and four for patients in core biopsy group. Compared with FNAB, CNB did not result in a higher complication rate (pneumothorax or hemoptysis). However the complication rate was much higher in combined procedure. Diagnostic yield of CNB was higher than FNAB performed alone or in combination with CNB.

Conclusion: CNB has a higher specificity to diagnose lung lesions. The results further showed that core biopsy gives a higher percentage of representative samples than FNAB or FNAB and CNB combined, and is a preferred method regardless of the higher rate of complications. FNAB has added advantage for culture and sensitivity and should also be performed when necessary.

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WIRE LOCALIZATION PROCEDURES IN NON-PALPABLE BREAST CANCERS: AN AUDIT REPORT AND REVIEW OF LITERATURE

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Background: Breast conservation surgery applies a number of techniques for accurate localization of lesions. Wire localization remains the method of choice in non-palpable breast cancers post neoadjuvant chemotherapy.

Objective: The aim of our study was to determine the accuracy of wire localization procedures in our department and compare it with internationally set protocols as per the Royal college of Radiologists. Post wire mammography as well as the margin status of the post- operative specimen assessed the accuracy of the procedure.

Methods: We retrospectively reviewed the data of 225 patients who presented to our department from May2014 to June 2015 post neoadjuvant chemotherapy with non palpable cancers. These patients are a candidate for wire localized lumpectomies either under ultrasound or stereotactic guidance. Metallic marker was placed in all the patients at the time of biopsy. Post wire mammogram was performed in all the patients and the distance of the wire tip from the marker was calculated. The presence or absence of the metallic clip in the postoperative specimen as well as the marginal status of the postoperative specimen was noted.

Results: 157 sonographic and 68 stereotactic wire localization procedures were performed. 95% of the wire tips were within 1 cm of the metallic marker. Marginal status was negative in 94% of the patients on histopathological specimen.

Conclusion: Our audit report declares more than 95% accuracy of image guided wire localization in successful excision of non-palpable breast lesions.

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FACTORS PREDICTING EARLY RELEASE FROM ISOLATION ROOM OF THYROID CANCER PATIENTS AFTER RADIOIODINE-131 TREATMENT

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Background: Patients with differentiated thyroid cancers (DTC) who receive radioactive iodine-131 (RAI) are released from isolation when their dose rate is below the regulatory requirement. The purpose of this study was to find out predicting factors for early release from isolation facility after RAI administration in patients with DTC.

Material and Methods: This was a prospective study which included 96 (58 females and 38 males) patients with DTC who had received RAI from April 2013 till August 2015. The study was duly approved by the ethical committee of the institute. Patients who had complete information of primary tumour size (PTS), serum TSH, stimulated thyroglobulin level [sTg] with antibodies (IU/ml) at the time of RAI treatment were included. All patients had normal serum creatinine level. To attain lower effective half-life good hydration and administration of soft laxative were ensured. Dose rate was measured (immediately, 24 h and 36 h) at 1 meter distance from anterior mid trunk and a dose rate <50 μSv/h at 1 meter was considered as releasing criterion. At 24 h 50 patients were released while remaining 46 patients were released at 36 h. A post-ablative whole body scan (PA-WBIS) was performed 5-8 days after RAI ablation in all patients.

Results: Patients released after 24 h were significantly younger, had smaller lesions with higher proportion of papillary cancer, lower sTg, lower sTg/TSH ratio and had received a lower dose of RAI as compared to those who were discharged after 36 h. Serum TSH and gender were not found to have any significant correlation between two cohorts. ROC and multivariate analysis have shown age ≤37 years, PTS ≤ 3.8 cm, RAI ≤ 150 mCi, sTg ≤ 145 ng/ml and sTg/TSH ≤ 1.085 as strong independent predictors for early release.

Conclusion: We conclude that younger age (≤37 years), smaller tumour size (≤3.8 cm), lower RAI dose (≤150 mCi), lower sTg (≤145 ng/ml) and a lower sTg/TSH ratio (≤ 1.085) are significant independent predictors for release at 24 h after RAI treatment in DTC patients. Effective utilization of these factors could help the treating physicians to use limited number of internment facilities with higher throughput, lower cost and lower psychological stress to patients.

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PREOPERATIVE MAGNETIC RESONANCE (MR) IMAGING IN NEWLY DIAGNOSED BREAST CANCER PATIENTS.

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Objective: This study was done to verify the usefulness of preoperative breast Dynamic Contrast Enhanced Magnetic Resonance (MR) imaging in newly diagnosed breast cancer patients.

Method: A retrospective study was conducted at women imaging department of Shaukat Khanum Memorial Cancer Hospital from January 2014 till June 2015.
A retrospective analysis of newly diagnosed breast cancer patients with conventional breast imaging (mammography and ultrasound) is performed. All patients were female with mean age of 40.35yrs (20yr-70yr). Total 76 patients who underwent DCE-MR imaging prior to treatment were selected. The MR imaging detection rate of additional malignant cancers occult to mammography and ultrasound was calculated. Data was analysed according to the following parameters: histopathological features of the index tumour (histological type and size) and mammographic density [according to the Breast Imaging Reporting and Data System (BI-RADS) classification from a fatty to d dense).The gold standard was the histological examination.

Results: MR imaging identified 30 mammographically and sonographically occult lesions other than the index cancer in 76 patients (39%). These additional lesions were located in the same quadrant as the index cancer in 7 women (23%), in a different quadrant in 15 (50%) and in the contralateral breast in 8 (26%). Out of these 30 patients with additional lesions 15 turned out malignant on histopathology. The cancer detection rate in the subgroup of index cancers with lobular histological type was 21%, was higher than the detection rate of 18 % recorded in the subgroup of ductal cancers. The cancer detection rate in the subgroup of index cancers greater than 2 cm was 73%, than the rate of 26% found in the subgroup of index cancers less than 2 cm. Mammographic density was correlated with MR detection of additional cancer, as 13 out of 15 patients 86% of additional malignancies being detected in dense breasts.

Conclusion: In patients with newly diagnosed breast cancer, preoperative MR imaging is useful for detecting additional synchronous malignancies that are not detected on conventional breast imaging. The cancer detection rate is 19%. The use of preoperative MR imaging as an adjunct to conventional breast imaging in women with dense breast, infiltrating

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LOW RECTAL CANCER, ITS, MANAGEMENT AND PROGNOSTIC PREDICTORS. AN INSTITUTIONAL AUDIT

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Background: Colorectal cancer is the third most common cancer in US and 2nd leading cause of death. Rectal cancer accounts for 30 % of CRC and surgical excision is predominant treatment modality with NAC. Despite advances in surgical technique (TME) and NAC, low rectal cancer still pose a great challenge.

Objective: The aim of this study was to review the outcome of APR* for low rectal cancers at AKUH and its various predictors.

Methods: A retrospective chart review of 62 patients with low rectal cancer who underwent APR, over a span of 13 years from 2000 to 2012, at the Department of Surgery, AKUH. Demographic data, clinical findings, investigations, procedure findings and follow up were recorded.

Data entry and analysis was done using SPSS version 19. Various predictors were assessed to look for overall recurrence free survival after the treatment, including CRM status, lymph node yield, tumor biology, extent of resection, NAC, TNM staging, AJCC staging and TME.

Kaplan Meier curve was use to plot recurrence free survival using Log rank test. Kappa statistics were used to find agreement b/w imaging modality used for pre op T staging.

Results: 62 patients met the inclusion criteria; mean age was 49.06 +/-15 with slight male preponderance of 58 % (40). 74 % (40) underwent sigmoidoscopy and majority of the patients had adeno Ca with moderate differentiation 77.4 % (48) and 68 % (42) respectively. Almost 70% of patients had locally advance Ca (T3-T4). 23% patients had +ve circumferential margins after APR. 34% of patients had received NAC. Mean lymph node yield was 15.21+/-8 post operatively and 66% of patients had adequate lymph nodes i.e. 12 or more. Mean follow up was 39.63 +/-30 months at which an overall recurrence free survival of 72% noted at 36 months and 67% at 60 months. CRM negativity and adequate lymph node dissection was strongly correlating with recurrence free survival.

Conclusion: Circumferential margin negativity, adequate lymph node dissection and NAC following surgery for (T3-T4) tumours has proven to be good prognostic factors for recurrence free survival after APR (TME) for low rectal cancers. MRI and EUS can be incorporated for pre op staging in identifying patients for NAC followed by surgery.

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POST CRICOID TUMORS AND FAILURE OF PERCUTANEOUS ENDOSCOPIC GASTROSTOMY INSERTION IN CANCER PATIENTS: RESULTS FROM PAKISTAN

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Objective: The aim of this study was to review all episodes of PEG insertion in patients with head and neck cancer (HNC) at a cancer specialist centre. We hypothesized that the site of tumour is an important risk factor for PEG failure, defined as failure to insert PEG tube using standard methods.

Patients and Methods: Data were extracted from the hospital's electronic medical records for all adult HNC patients who had at least one attempt to insert PEG tube between the entire calendar years 2009 to 2012. Using a structured data extraction form, we abstracted patients' demographic data and clinical information including the primary site of tumour, TNM staging, whether PEG tube was inserted successfully, any complications resulting from PEG tube insertion and duration the tube was in place. PEG tube was inserted by using Ponsky's pull technique and a 20 Fr tube was used in all patients.

Results: We identified a total of 339 HNC patients who had received at least one attempted PEG tube insertion. The mean age of patients was 49.5 years (SD +- 14.7 year). There were 66% males, and a majority of patients had a tumour in the oral cavity (30.4%) or pharynx (44.5%) while 24% patients had a post-cricoid tumour. Histopathologically, most tumours (75.8%) were squamous cell carcinoma presenting at a T4 (52.6%) and M0 (91.7%) stage. In 303 patients (89.4%) PEG tube was inserted successfully. In 60.4% of these patients, the PEG tube was removed after it was no longer needed. 91 patients (30%) failed to follow up after PEG tube insertion and their outcome remained unknown while 28 patients (9.2%) died before the tube was removed. Most patients (77.6%) had no complications resulting from PEG tube insertion. The most common complication was pain (13.4% patients) and peri-PEG infection (6%). 4 patients each had a peri-PEG leak or peri-PEG bleeding while one patients developed peritonitis following tube insertion. The mean time for which PEG tube remained in place was 191 days (range: 8 to 847 days). Age, sex or T stage of the tumour was not found to be significant predictors of PEG failure. The only significant factor was presence of post-cricoid or laryngeal tumours that increased the risk of PEG failure 12 times (95% confidence interval: 3.4 to 42.3) compared to tumours of oral cavity

Conclusion: PEG tube should be used as a first line feeding option in patients with all type of head and neck cancers, however, the attending clinicians should have this foresight of higher failure rates in patients with post-cricoid tumour especially if patient presents with absolute dysphagia, and alternative options with its associated complications should be clearly discussed conveyed to the patients and their families.

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ARTERY FIRST TECHNIQUE FOR MANAGEMENT OF ABERRANT HEPATIC ARTERIAL ANATOMY DURING PANCREATICODUODENECTOMY – OUR EXPERIENCE

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Introduction: Aberrant hepatic arterial anatomy poses a challenge for surgeon during pancreaticoduodenectomy (PD). These anomalies are best picked up on preoperative imaging in order to avoid inadvertent injury to the aberrant vasculature resulting in liver ischemia or biliary-enteric anastomotic failure. We present our experience of dealing with aberrant hepatic vessels during PD.

Methods: Patients with aberrant hepatic vasculature who underwent PD between September 2014 to August 2015 were included. We used artery first technique for dissection in cases identified on preoperative imaging. Aberrations were classed according to Hiatt classification.

Results: Between September 2014 to August 2015, 23 PD were performed with aberrant arterial anatomy in 10 (43%) cases (table 1). These vessels were recognized and preserved in 9 cases. In one patient, the replaced right hepatic artery(rRHA) arising from SMA was coursing through pancreatic parenchyma needing resection and reconstruction with uneventful postoperative recovery. We also identified one rRHA arising from SMA coursing lateral to CBD and entering liver parenchyma in gallbladder fossa.

Conclusion: Aberrant hepatic arterial anomalies are common and should ideally be picked up by preoperative imaging. It is possible to preserve these vessels in most cases with careful surgical dissection using artery first technique. Surgeons performing pancreaticoduodenectomy should be well versed with the aberrant vascular anatomy to minimize any inadvertent damage.

Table 1- Hepatic artery aberrations according to Hiatt classification and their intraoperative management

Variation	of Cases	Hiatt type	Management
Normal Vascular Pattern	13	Type 1	SD
Replaced Right Hepatic Artery from SMA	5*	Type 3	AF
Common Hepatic Artery from SMA	2	Type 5	AF
Accessory Left Hepatic Artery from Left Gastric Artery	1	Type 2	SD
Replaced Right Hepatic Artery from Celiac Trunk	1	Type 3	SD
Common Hepatic Artery from Aorta	1	Type 6	SD

SD Standard dissection, AF Artery first dissection; aberrant artery slung followed by standard dissection. *One Hiatt type 3 patient needed resection reconstruction of replaced right hepatic artery from SMA.

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CDX2 AS A PROGNOSTIC MARKER IN GASTRIC ADENOCARCINOMA

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Background: There is considerable evidence in the literature to suggest a role for CDX2 in intestinal metaplasia and gastric cancer development but its prognostic implication on gastric cancer continues be a matter of debate. We conducted this study to assess the prognostic significance of CDX2 in the gastric adenocarcinomas.

Methods: We retrospectively reviewed our database for gastric adenocarcinoma (well, moderate and poorly differentiated) cases diagnosed at our hospital from 2004 to 2008. These were subsequently stained with CDX2 immuno-histochemical stain. CDX2 positive and negative groups were then compared for overall survival.

Results: A total of 101 patients (mean age 50y; 60% male) were included in the study. 31/101 (30.7 %) cases were CDX2 positive. Of these, 23 (74%) patients underwent curative surgical resection. Whereas, in CDX2 negative group only 12 (17%) patients underwent curative surgery (p=.0001). Out of those who underwent surgical resection: 9% had stage I, 37 % had stage II, 43 % had stage III, and 11% had stage IV tumours on TNM staging of post-surgical resection histological specimens. Mean overall survival of CDX2 positive group was 17 months while that of CDX2 negative group was 6 months (p= 0.0001).

Conclusion: CDX2 positive gastric carcinomas are more likely to be resectable and there is significant better survival in these patients.

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EARLY OUTCOMES AFTER LAPAROSCOPIC EXTRA-LEVATOR ABDOMINO-PERINEAL EXCISION FOR LOW RECTAL CANCER

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Introduction: Low rectal cancers are typically associated with worse oncological outcomes when compared to upper and mid rectum. Extralevator Abdomino-Perineal Excision (ELAPE) has been an extended resection technique shown to improve circumferential resection margin positivity and local recurrence rates. We report early experience with laparoscopic ELAPE following adaptation at our institution.

Methods: Patient undergoing ELAPE for low rectal cancer between Oct 2014 and July 2015 were studied. Demographic, clinical, operative and short term outcome data was collected.

Results: A total of 30 patients underwent Laparoscopic ELAPE. The mean age was 44 years. Direct closure of the perineal wound was performed in 10 patients while mesh closure was required in the remaining patients. There was no operative mortality. Only one patient required re-admission for re-exploration of perineal wound. Perineal wound infection developed in 10 patients. One patient had pathological complete response while rest had residual adenocarcinoma. There was no intraoperative tumour perforation while the mean CRM was 8.7 mm.

Conclusion: ELAPE is a safe technique that results in adequate oncological specimen for distal rectal cancer. Data regarding long-term oncological outcomes for these patients is being collected.

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SHORT TERM OUTCOME OF PANCREATICODUODENECTOMY IN A SPECIALIZED HEPATO-PANCREATO-BILLIARY SURGICAL ONCOLOGY UNIT

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Background: Pancreaticoduodenectomy (PD) is associated with high postoperative morbidity (30-50%) even in high volume centres and pancreatic fistula being the most important contributing factor (5-30%). We present our experience with pancreatic and periampullary neoplasms with emphasis on surgical technique and clinical post-operative outcomes.

Methods: We reviewed case notes of all patients who underwent surgery for periampullary or pancreatic head tumours during the last twelve months. Patient's demographics, type of tumour, staging, surgical technique, hospital stay, morbidity and mortality were analysed using SPSS 19.

Results: Total numbers of 31 patients were included in the study among which 22 (71 %) were males and 9 (29 %) were females with median age of 53 years (range 19-76). Jaundice was the most common presenting symptom 22 (71%). On imaging median tumour size was 25mm and (range 10- 67mm). 14 (53.8%) patients had reconstruction with pancreatico- jejunostomy and 12 (46.2 %) had pancreatico-gastrostomy. Mean blood loss was 485.4 + 456.3 mls, mean operating time 472.29 + 177) and ICU stay 1 day. Five (16.7%) patients had wound infection. Six (20%) patients had post-operative minor pancreatic leak. We noted pancreatic anastomotic leak rate in PG 8.3% vs. PJ 35.7%. One patient had post-operative GI haemorrhage from pancreatic stump which required endoscopic intervention. Five (16.1%) patients were irresectable on trial of dissection. No patient required re-operation. There was one death in the series (3.2%). The mean post-operative hospital stay was 13 days (range 6-25). The most common site was periampullary 15(48.4%) followed by pancreatic head 10 (32.3%). Histologically Adenocarcinoma were 21 (75%) cases, followed by Neuroendocrine tumours 03 (10.7%) and GIST 02 (7.1%).

Conclusion: Pancreaticoduodenectomy has evolved as a safe procedure with excellent post-operative outcome if carried out in a dedicated specialized unit. Our study has shown that pancreatico-gastrostomy is a better anastomosis than pancreatico- jejunostomy. There is country wide need to develop specialized hepato-pancreato-billiary units in order to achieve good results from this complex procedure.

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TECHNICAL STEPS IN LAPAROSCOPIC COMPLETE MESOCOLIC EXCISION AND CENTRAL VESSEL LIGATION IN RIGHT-SIDED AND TRANSVERSE COLONIC RESECTIONS – VIDEO PRESENTATION

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Background: Complete Mesocolic Excision (CME) and Central Vessel Ligation (CVL) have been shown to improve oncological outcomes without increasing the morbidity and mortality. Meticulous dissection in correct plain helps remove the colon along with its fascial envelope and results in higher lymph node yield. Compared to left-sided colonic tumours, CME and CVL is technically more challenging for right-sided and transverse colonic tumours. We aim to present the technical steps in laparoscopic CME and CVL for tumours in Cecum, hepatic flexure and transverse colon.

Methods: Cases of laparoscopic right hemicolectomy performed at SKMCH&RC over last 6 months were reviewed. Important steps of laparoscopic CME+ CVL for right sided and transverse colonic tumours were identified. The technical steps for laparoscopic standard right hemicolectomy with CME + CVL for cecal and hepatic flexure tumours, as well as laparoscopic extended right hemicolectomy for transverse colonic tumours are shown in selected video clips.

Results/Conclusions: Although technically more challenging, Laparoscopic CME and CVL for Standard and Extended Right Hemicolectomy can be safely performed. It is important to identify and dissect in the proper plains for complete mesocolic excision to achieve the oncological benefits of CME + CVL.

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COMPARISON CLINICAL OUTCOME AND COST-EFFECTIVENESS OF TEGAFUR AND CAPECITABINE FOR THE TREATMENT OF METASTATIC COLORECTAL CANCER

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Background: Cancer is now recognized as a growing public health problem and contributing significantly to double burden of disease in developing world which are still not able to control of deaths due to communicable diseases .In Pakistan, there is continuous rise increase in morbidity and mortality associated with cancer due to lack of awareness, limited resources, inaccessibility to health care facilities. Dilemma is that majority of these deaths occur due to un affordability of treatment expenses. Under such challenges circumstances, Pakistan needs to work out extraordinary strategy keeping in consideration patient affordability and accessibility. Main purpose of this study was to compare the effectiveness of treatment of Capecitabine as compared to Tegafur in treatment of metastatic colonic carcinoma.

Objective: To evaluate the clinical and cost effectiveness of oral chemotherapeutic agents Capecitabine and Tegafer as first-line treatments for patients with metastatic colorectal cancer

Methodology: The analysis involved 121 patients of metastatic colonic carcinoma admitted at Almehrab Tibi Amdad Hospice care, Karachi between September 2013 to March 2015. The patients selected to enrolled in present study were aged ≥18 years, both sex and histologically diagnosed cases of colorectal cancer. Patients who had not received chemotherapy in the six months prior to the present study were included. While those with history of hypersensitivity to Tegafur , fluoropyrimidines, capecitabine, or any other ingredients of this product, Inadequate hematopoietic function WBC≦4,000/mm3; ANC≦2,000/mm3; Platelet≦100,000/mm3, Inadequate organ function ,CNS metastasis ,life expectancy less than 3 months and those who were not willing to participate were excluded. All subjects fulfilling the eligibility criteria were randomly assigned to two groups, one group received oral capecitabine (1250 mg/m2 twice daily for 14 days followed by one week gap) and other received Capsule Tegofer 500 mg daily for 28 days followed by one week gap. All the patients were followed and response was observed after 3 months, 6 months and at the end of year.

Results: Patients on the Capsule Tegafer regimen showed overall improved response rates and have lesser side effects as compared to Capecitabine in treatment of colorectal cancer. Patients receiving Tegafer showed significantly less incidence of nausea, vomiting, alopecia, of diarrhoea and stomatitis ($P < 0.05$), hand-foot syndrome and grade 3/4 hyperbilirubinemia were found to be more significantly associated with Capecitabine ($P < .0001$).Cost of treatment per patient and per cycle using oral Tegafer was less than that using capecitabine

Conclusion:
In regard to two therapeutic agent treatment with Tegafer offer a number of advantages over Capecitabine, treatment with Tegafer showed overall improved response rates and has lesser side effect in comparison with Capecitabine. Tegafer is proved to be cost-effective and clinically better approach for the treatment of metastatic colorectal cancer. Further research should be carried out with special focus on survival difference, improvement of quality of life and the measurement of patient preference with regard to both chemotherapeutic agents.

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RECTAL WASHOUT SOLUTION TO PREVENT LOCAL RECURRENCE FOLLOWING TOTAL MESORECTAL EXCISION FOR RECTAL CANCER: SYSTEMATIC REVIEW AND META-ANALYSIS

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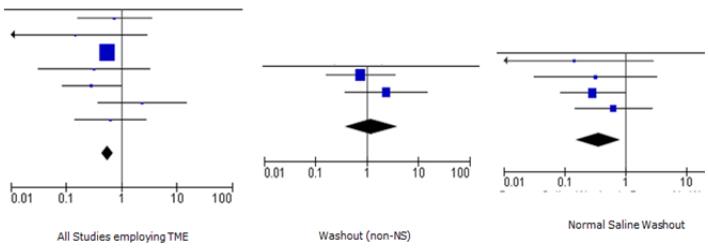
Background: Implantation of intraluminal viable tumour cells has been shown in laboratory and clinical studies and is a possible mechanism of local recurrence. Rectal washout has shown to reduce rates of local recurrence in comparative observational studies and their meta-analyses. The technique of rectal washout varies significantly in the literature. We intend to study the effect of particular solutions in preventing local recurrence of rectal cancer following Total Mesorectal Excision (TME).

Methods: Literature search was performed to obtain studies comparing rectal washout to no washout in patients undergoing TME for rectal cancer between 1990 and 2015. Primary end-point was local recurrence. Meta-analysis was performed on RevMan®5.2 using Mantel-Haenszel random-effects model. Forrest plot for all studies employing TME, studies with washout using normal saline and washout using other solutions/agents were calculated.

Results: Six (6) observational studies and one randomized controlled trial utilizing TME were found that compared rectal washout to no washout group and looked at local recurrence as outcome. A meta-analysis of these studies irrespective of the washout solution and volume showed a protective effect of rectal washout (OR 0.56; CI 0.44-0.71). This protective effect was almost doubled when studies utilizing Normal Saline rectal washout were analysed (OR 0.33, CI 0.14-0.78). However, we failed to see an association between rectal washout and local recurrence when studies utilizing solutions other than Normal Saline were analysed (OR 1.21; CI 0.37-3.92).



Conclusion: From the meta-analysis of the included studies so far, rectal washout with Normal Saline appears to have the most beneficial effect in reducing local recurrence following TME for rectal cancer. A more thorough search including other non-English studies and unpublished literature is currently underway to further refine this conclusion.

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CLINICAL IMPACT OF EXTENDED BIOMARKER TESTING FOR METASTATIC COLORECTAL CANCER PATIENTS TREATED WITH PANITUMUMAB: A RETROSPECTIVE STUDY AT MONTREAL FROM 2009-2014

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Purpose: Epidermal Growth Factor Receptor Inhibitors (EGFRi) are effective agents in the treatment of metastatic colorectal cancer (mCRC), however one third of KRAS wild type (WT) tumours do not respond. Recent genomic studies have identified mutations downstream of the EGFR signalling pathway such as NRAS, which also limits EGFRi sensitivity. We conducted a real-world retrospective analysis on 55 KRAS and NRAS WT patients treated with Pmab at the Jewish General Hospital between 2009-2014. Our study aim was to demonstrate clinical benefit associated with extended biomarkers analysis.

Methods: A chart review was conducted on 55 patients diagnosed with mCRC, genotyped as both KRAS and NRAS wild type at exon 2, 3, 4 and, who underwent Pmab treatment for which, follow up information was available. Primary endpoints were progression free survival (PFS) and overall survival (OS) with the secondary endpoint of toxicity. Adverse events were graded based on CTCAE v.4.0 guidelines and were captured if they were graded ≥ 3. Estimates of survival were determined with the Kaplan-Meier method. Our own previously reported historical cohort by Mamo et al, (Current Oncology, 2013) which contained 44 patients screened for KRAS WT exon 2 only, was used as a control group.

Results: In our cohort, the median age was 60 years; 54% of patients were male with the majority of them having ECOG 0-1. Patients previously received treatments with the first line containing FOLFOX/XELOX ± bevacizumab and second line consisting of FOLFIRI ± bevacizumab. The majority of patients received Pmab as monotherapy, with only 2% receiving combination Pmab and irinotecan. Median number of Pmab treatment cycles received was 5 and patients were followed for a median of 30 months (range 11-71). We were able to demonstrate a significant survival improvement in double tested wild type populations as compared to our historical, KRAS only tested, control group. The most common treatment related adverse events were skin toxicity and hypomagnesemia, 27.8% and 55.6% respectively. No infusion reactions were reported.

	PFS (months)	OS (months)
KRAS WT exon 2	5 (95% CI 3-9)	9 (95% CI 6-18)*
KRAS & NRAS WT exons 2, 3, 4	6 (95% CI 5.2-6.7)	42 (95% CI 38.1-45.8)*

* $P < 0.05$

Conclusions: Our results support the use of extended RAS mutation testing for better selection of patients who will receive a survival benefit from treatment with panitumumab. Likewise deselecting patients with RAS mutations will limit toxicities from an ineffective treatment regimen.

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PATTERNS OF FAILURE IN PATHOLOGIC N1 BREAST CANCER PATIENTS TREATED WITH MASTECTOMY, WITHOUT RADIOTHERAPY

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Objectives: Pakistan has the highest rate of breast cancer for any South Asian population and majority of the patients present with locally advanced or metastatic disease. We report on patterns of failure and survival in pathologic N1 breast cancer patients treated with mastectomy and adjuvant chemotherapy / hormonal therapy, without post mastectomy radiotherapy (PMRT).

Materials and Methods: Between 1995 to 2009, the hospital information system identified 72 women with pathologically confirmed N1 breast cancer. Axillary nodes were clinically palpable in 75% of the patients at presentation. All patients were treated with mastectomy (including level I-II axillary dissection). Distribution of pathologic tumor size was up to 2 cm, 2.1 to 5 cm, and more than 5 cm in 25%, 62%, and 13% of the patients respectively. Distribution of dissected lymph nodes was one to five, six to nine and more than ten in 14%, 13% and 73% of the patients respectively. Median number of dissected lymph nodes were 13 (range 2-27) and median number of positive lymph nodes were 2 (range 1-3). 73% of the patients received doxorubicin based chemotherapy either in neo-adjuvant or adjuvant setting. 60% of the patients with positive ER/PR receptors also received hormonal manipulation. None of the patients were offered PMRT. Median age was 48 years (range 27-88 years). Patterns of failure and disease free survival (DFS) were determined.

Results: Median follow-up duration was 5.6 years. Patterns of failure; isolated local (LF) 5.5%, isolated regional (RF) 3%, loco-regional (LRF) 3% and distant failure (DF) in 37.5% of the patients respectively. The cumulative incidence of LF, RF and LRF for patients with a tumour size of up to 2 cm, 2.1 to 5 cm, and more than 5 cm were 1%, 9%, and 0% respectively. These incidences for one to five, six to nine and more than or equal to ten dissected lymph nodes were 1%, 1%, and 8% respectively. The 10 years DFS for the whole group was 46%.

Conclusions: PMRT can be omitted in patients with up to three positive axillary lymph nodes due to very low incidence of local and regional failures. This merits further evaluation in large scale randomized trials.

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TREATMENT OUTCOME OF BREAST LYMPHOMAS: AN AUDIT OF 27 CASES TREATED AT A SINGLE CENTER

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Background: Breast lymphomas are a very rare entity. We present a review of breast lymphoma patients seen at a single centre over a 20 year period. . Our aim was to review of histological types of breast lymphomas, treatment modalities and outcome according to stage.

Methods: We identified patients who were diagnosed and treated for breast lymphoma at a single centre from January 1995 to January 2014 and extracted data regarding patients' demographics, histological subtypes, treatment and outcomes.

Results: Twenty seven patients were included in the study .The median age of patients at diagnosis was 37 years (range: 22-76 years). Female predominance was seen, only 3 patients were males, 55.6% had presented with B symptoms (fever, night sweat, and weigh loss). Most lymphomas were Non-Hodgkin's, only 3 patients had Hodgkin's lymphoma. In about half of the patients (48%) the left breast was involved, while 4 patients (14.8%) had bilateral breast involvement. Diffuse large B-cell lymphoma (DLBCL) was the most common sub-type present in 59.3% of patients. Common immunochemistry markers were CD-20, CD-30, and Ki-67. Bone marrow involvement was present in 8 patients (29.6%) while 25 patients (92.6%) had no distant spread of the disease at the time of presentation. Common presentation was in stage I (33.3%) or IV (44.4%) of the disease. Chemotherapy was the main stay of treatment and 55.6% patients also received radiation to the affected breast. . Complete response after chemotherapy was seen in 17 patients (63.0%), partial response in 2 patients (7.4%) while 7 patients (26%) had progressive disease. Role of surgery was limited for diagnosis and local palliation. Six patients (22%) were documented to have died during the study period while the remaining were alive at the last follow up. Mean follow up was 46.8 months (survival of 31.6 months among those who died and a follow up of 51.2 months among those who were alive during the study period; p=0.4). Seven patients (33.3%) who were alive at last follow up, as well as 1 patient who died, survived more than 5 years after diagnosis.

Conclusions: Patients of breast lymphoma should receive aggressive treatment, with combination of chemotherapy and radiation therapy. Surgery should be limited for diagnosis and palliation of local symptoms in progressive disease.

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BREAST CONSERVING THERAPY OR MASTECTOMY FOR PATIENTS WITH TRIPLE NEGATIVE/BASAL BREAST CANCER

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Purpose/Objectives: Breast cancers with the basal or triple-negative phenotype (TNBC) represent a management challenge as they are high-grade, aggressive neoplasms lacking the estrogen, progesterone or HER2/neu receptors which are the targets of modern breast cancer therapy. The prognosis for this subtype of breast cancer is poor, however it is unknown what impact the surgical approach to locoregional control of these specific tumours has on outcome.

Material/ Methods: Outcomes for 145 patients with TNBC treated with breast conserving therapy (BCT) or mastectomy were analysed with respect to the primary endpoints of breast cancer recurrence and death.

Results: Mastectomy was performed in 57% (n=83) of patients, and 43% (n=62) were treated with BCT. Median follow-up was 36 months (range 12-205). There was no significant difference in locoregional recurrence or disease free survival between the mastectomy and the BCT group (p=0.405). However, the rate of distant recurrence was significantly higher in the mastectomy group (29%) compared to the BCT (12.9%) and the mastectomy group had a significantly poorer overall survival (p=0.002). This may be attributed to the mastectomy group having a larger neoplasm size than the BCT group (p=0.013) and a higher proportion of patients with N2/N3 disease in the mastectomy group.

Conclusions: The observation that there is no significant difference in LRR or DFS for Triple Negative breast cancers treated with BCT compared to mastectomy indicates that these tumours can be considered suitable for BCT, but their high recurrence rate overall highlights the importance of further investigation into breast cancer biomarkers focusing on the development of a targeted therapy.

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MANAGING THE AXILLA IN EARLY BREAST CANCER. IMPACT OF ACOSOG Z0011 TRIAL IN CHANGING PRACTICES AT SHAUKAT KHANUM MEMORIAL HOSPITAL

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Introduction: The ACOSOG Z0011 trial has been described as practice-changing. The new guidelines have been adopted at SKMCH since April 2014. The goal of this study was to determine the impact of the trial on surgeon practice patterns at our institution.

Methods: A comparison of patients undergoing surgery for early breast cancer before and after the implementation of the new guidelines was done. We adopted the new guidelines in April 2015. Patients meeting Z0011 inclusion criteria were identified. For group A (Pre Z0011) patients operated between Jan to Dec 2013 were studied. And for Group B (Post Z0011) patients operated between July 2014 to Jun 2015 were included. Clinicopathologic data were compared between the two groups.

Results: There were 318 patients with clinical T1-2 tumours planned for breast conservation. 68% patients had T1 tumor and 32% had T2. 92% of the patients had IDCa. There were 150 patients in the pre-Z0011 group and 168 post-Z0011. 68% of the patients in Group A were ER+ve while 70% in group B. 36 (23.3 %) patients were sentinel lymph node (SLN) positive in the pre-Z0011 group versus 42 (13 %) post-Z0011 ($p = 00.06$). Before Z0011 100 % (36/36) of SLN-positive patients underwent axillary node dissection (ALND) versus 24 % (10/42) after Z0011 ($p < 0.01$). Median no of SLNs identified in group A were 1.3 and group B were 1.4. After Z0011, surgeons were more likely to perform ALND on patients with larger tumours (2.8 vs. 1.8 cm, $p = 0.01$), lobular histology ($p = 0.01$), presence of LVI ($p = 0.04$). There was a decrease in median operative times of the two groups (99 vs. 68 min, $p < 0.01$). There was a significant decrease in the overall hospital stay of sentinel lymph node positive patients in between the two groups (1.8 days vs 1.3 days p value < 0.01).

Conclusions: Surgeons at our institution have implemented Z0011 results with a significant short term advantages. However the real question to be answered is the increased risk of recurrence and decreased overall survival by not doing the axillary dissection in sentinel lymph node positive patients. A question which requires a longer follow up and a bigger population size to be answered adequately. But for now Z0011 guidelines stand implemented because of the apparent short term advantages they offer.

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PHYLLODES TUMOR: REVIEW OF AN UNCOMMON BREAST PATHOLOGY AT A SPECIALIZED CANCER CENTRE

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Purpose: Phyllodes tumours are rare breast tumours that comprise almost 1% of breast tumours. The outcome for these tumours is generally considered better than breast cancers. We review the cases of Phyllodes tumour presented to a specialized cancer centre over a 14 year period.

Materials/Methods: All case records with the diagnosis of phyllodes tumour between 1999 and 2012 were retrieved from the Cancer Registry. Patient demographics, site of tumour, size , axillary lymph node status, whether primary or recurrent, metastatic status, histological type, type of surgery , any complication, post margin positivity, post-operative radiation therapy, recurrence, whether local or distant ,morality and follow up duration were recorded. Data was analysed using SPSS.

Results: A total of 77 cases of phyllodes tumour were seen between 1999 and 2012. All patients were female with a mean age of 39.9 years. All patients presented with a breast lump with median duration of 8 months. 65% patients presented with primary tumour compared to 10% recurrent tumours and rest referred after surgery outside. Median size on histopathology was 5 cm (IQR 3.5 – 8.5 cm). Over a median follow-up duration of 31 months (IQR 9-48 months), 69 patients (89.6%) were alive, while 3 patients (3.9%) did not survive and 5 patients (6.4%) lost to follow-up. Recurrence was seen in 10 (13%) patients with median time to recurrence 12 months (IQR 7-24). Involved axillary lymph nodes and borderline or malignant histopathology were found to be significantly associated with recurrence (p 0.04), while margin positivity, post op Radiation therapy and histopathology were note significantly associated with recurrence.

Conclusion: Phyllodes tumour is an uncommon breast tumour that is predominantly treated with surgical excision. Although survival with these tumours is better compared to breast cancers, involvement of axillary nodes and borderline or malignant histopathology confer and increased risk of recurrence in these patients.

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ACCURACY AND ADEQUACY OF PRE-OPERATIVE BRACKETING WIRE LOCALIZATION FOR THERAPEUTIC EXCISION OF MALIGNANT BREAST LESIONS AND IN ACHIEVING TUMOR FREE MARGINS

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Purpose / Objectives: The purpose of this study is to determine the accuracy of pre-operative bracketing wire localization for therapeutic excision of non-palpable malignant breast lesions and achieving tumour free margins in patients undergoing breast conservation surgery.

Methods: We retrospectively reviewed the medical records, mammograms and pathology reports of all patients who underwent bracketing wire localization under mammographic and / or sonographic guidance for malignant breast lesions at Aga Khan University Hospital between January and September 2015.

Results: 24 patients with mean age of 46.33 years (range 25 - 66 years) underwent breast conservation surgery for a pre-operative diagnosis of invasive ductal carcinoma (n=21), invasive lobular carcinoma (n=1), DCIS (n=1) and metaplastic carcinoma (n=1) with the help of bracketing wire localization. Pre-treatment clinical size of masses ranged from 2 to 12 cm. 79.2% (n=19) received neo-adjuvant chemotherapy to reduce the size of lump, 12.5% (n=3) patients received adjuvant chemotherapy and 8.3% (n=2) did not receive any form of chemotherapy. 75% (n=18) underwent stereotactic wire localization, 4.16% (n=1) underwent sonographic localization whereas 20.8% (n=5) were localized with the help of both mammogram and ultrasound. Specimen radiograph was performed in 22 out of 24 patients. Presence of radiopaque marker within the excised specimen and grossly adequate margins around the lesion guided the surgeon to decide about further margin excision. Radiopaque marker was identified in all specimen radiographs whereas additional margin excision was carried out during the same procedure in 58.3% cases (14 out of 24). 87.5% (n=21) had negative margins of the breast lump and 2 out of 24 patients (8.33% had close margins (DCIS at 0.1cm from closest margin). None of the excised margins showed any evidence of tumour in the final histopathology report except in one patient which showed invasive tumour focus in additionally excised margin and underwent second procedure of margin excision followed by mastectomy (4.16%).

Conclusion: Our study showed that bracketing wire localization is a beneficial procedure in terms of achieving clear histologic margins in breast conservation surgery without significant increase in the rate of re-excision. When deciding about the primary surgical procedure, it is important for the surgeon to have a clear discussion with the radiologist about the location of needle placement and the accuracy should be confirmed with the help of specimen radiography while the patient is on table.

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PRESENCE OF 32BP DELETION IN CCR5 GENE: DISSEMINATING FACTOR OF BREAST CANCER

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Introduction/Aim: CC Chemokine receptor type 5 (CCR5) is a cell surface receptor. It has high affinity for chemotropic cytokines called chemokines. By recruiting immune cells to the site of chemical stimulus, it tempers the immune response. Deletion present in the open reading frame of CCR5 gene exon 3 is regarded as CCR5Δ32. Because of CCR5Δ32 mutation malformed receptor is synthesized which executes weakened function. Role of CCR5Δ32 has been implicated with the development and dissemination of different cancers. This study aims to observe CCR5Δ32 mutation and detect its role in breast cancer development and metastasis.

Methodology: After taking informed consent, blood samples were collected from breast cancer patients and matched controls. Genetic variation comprising CCR5Δ32 was examined in patients and controls by PCR and direct DNA sequencing. Statistical and bioinformatics tools were used for data analysis.

Results: The two allelic mutations were found in CCR5 gene. They are comprised of homozygous insertion (I/I) and heterozygous deletion (I/D). Presence or absence of 32bp DNA fragment is regarded as mutation, which appear either as a monoallelic form or a biallelic forms. Positive association of CCR5Δ32 with breast cancer was found by Chi square analyses. ($\chi 2$ 15.07 $p < 0.001$).

Conclusion: Immune cells are activated and migrated to tumour site by signalling of CCR5. Deletion encompassing 32 bp DNA deforms the receptor and damage its function and suppress immune response at the tumour site. This condition elevates inflammation, progression and metastasis of tumor to other organs.

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ASSOCIATION BETWEEN THE BSMI POLYMORPHISM IN VITAMIN D RECEPTOR GENE AND BREAST CANCER RISK: RESULTS FROM A PAKISTANI CASE-CONTROL STUDY

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Background: Vitamin D is postulated to decrease the risk of breast cancer by inhibiting cell proliferation via the vitamin D receptor (VDR). Two common single nucleotide polymorphisms (SNPs) in the VDR gene, rs1544410 (BsmI) and rs2228570 (FokI), are inconsistently associated with breast cancer risk in Caucasian populations, while data for Asians are scarce. Here, we investigated the possible contribution of these SNPs to breast cancer risk in Pakistani breast cancer patients and in controls participating in a hospital-based breast cancer case-control study (PAK-BCCC).

Methods: Genotyping of the BsmI and FokI SNPs was performed by PCR-based restriction fragment length polymorphism (RFLP) analysis of 463 genetically enriched female breast cancer cases with known BRCA1/2 status and in 1,012 controls from Pakistan. The association between SNP genotypes and breast cancer risk was investigated by logistic regression adjusted for potential breast cancer risk factors and stratified by BRCA1/2 status and family history. Odds ratios (ORs) and 95% confidence intervals (CIs) were reported.

Results: The b allele of the BsmI was associated with an increased breast cancer risk (per b allele OR 1.28, 95% CI 1.09-1.49, P=0.003). Subgroup analysis revealed that this effect was restricted to BRCA1/2 non-carriers (per b allele OR 1.33, 95% CI 1.11-1.59, P=0.002) and was stronger in those who reported a positive family history of breast and/or ovarian cancer (per b allele OR 1.64, 95% CI 1.20-2.22, P=0.002). No association with breast cancer risk was detected for the FokI SNP.

Conclusions: The BsmI polymorphism in the VDR gene may be associated with an increased breast cancer risk in Pakistani women negative for BRCA1/2 germline mutations.

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BRCA1 GENETIC TESTING IN A PAKISTANI BREAST-OVARIAN CANCER FAMILY WITH MULTIPLE CONSANGUINEOUS MARRIAGES

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Objectives: Women harbouring pathogenic germline mutations in BRCA1 and BRCA2 genes have high lifetime risks of developing breast cancer (BC) and ovarian cancer (OC). Therefore, it is clinically relevant to identify individuals harbouring BRCA1/2 mutations to optimize cancer risk management. Conventionally, genetic testing is offered to the individual affected with BC/OC. If a pathogenic mutation is identified then predictive genetic testing (PGT) is extended to the patient's first-degree relatives. Interpretation of results, however, can become particularly challenging in populations with high consanguinity rates including Pakistan. The case presented here highlights the novel aspect of genetic testing in families with multiple consanguineous marriages.

Materials and Methods: A 45-year-old female was diagnosed with triple negative breast carcinoma. She reported a strong family history of BC/OC and was referred to the SKMCH&RC for genetic counselling and risk assessment. After obtaining informed written consent, blood sample was drawn for DNA extraction. Comprehensive mutation analysis of BRCA1 and BRCA2 was performed by denaturing high-performance liquid chromatography (DHPLC) and direct DNA sequencing.

Results: Pedigree analysis showed six BC, two OC and one uterine cancer. Four consanguineous marriages were reported within the family. The index patient's parents, her two sisters and a son were married to first cousins. Mutation analysis revealed a BRCA1 c.1961dupA mutation in the index patient. PGT was offered to at-risk relatives. One of the patient's sisters with OC was tested negative for this mutation. However, PGT was extended to her daughters as their parents were cousins and originated from the same great-grandparents. One of the daughters harboured this mutation implying that it was inherited from the unaffected father as her affected mother was found to be negative. In such a situation, paternal transmission of the mutation to the daughter would have been missed had the conventional testing practice been followed.

Conclusion: Our study highlights the importance of offering PGT to offspring, whose affected parent did not harbour the family-specific mutation in the setting of consanguineous BC/OC families from Pakistan and other countries with high consanguinity rates.

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THERAPEUTIC MAMMOPLASTY: FUSION OF ONCOLOGICAL & AESTHETIC SURGERY FOR OPTIMUM OUTCOME

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Background: Oncoplastic Breast surgery (OPBS) represents a major advance in breast cancer surgery. It is based on basic principles: ideal oncology surgery with free margins, adequate local control of disease and immediate restoration of shape & symmetry by fusion of plastic surgery techniques into breast cancer surgery. Author aims to highlight the advantages of therapeutic mammoplasty (TM) and comparing its safety against breast conservation surgery (BCS) like re-excision of margins, reoccurrence and survival rates as well as aesthetic outcome.

Methods: All breast cancer patients eligible for BCS in last 24 months who has large size breast (Cup C), ptosis and macromastia were candidate for therapeutic mammoplasty. Patient with uncontrolled diabetes, active smoker were excluded from study.

Results: A total of 57 female patients underwent therapeutic mammoplasty. Results confirm clear aesthetic advantage with significantly reduced positive margins (3.5% vs. 18.6%), with comparable reoccurrence, survival rates and complication rate but more time consuming as well as cost issues needs to be addressed.

Conclusion: Whilst technically more challenging than standard breast conserving therapy (BCT), OPBS is well proven, if not yet widely practised, both oncologically and aesthetically particularly in patients with ptosis and macromastia. As it happens with all changes of paradigms of breast cancer management; mastectomy, BCS and therapeutic mammoplasty is an established third pathway.

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PROGNOSTIC IMPLICATIONS OF HISTOLOGICAL CLEAR CELLS IN HIGH GRADE INTRACRANIAL EPENDYMAL TUMORS: RETROSPECTIVE ANALYSIS FROM A TERTIARY CARE HOSPITAL IN PAKISTAN

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Objectives: Clear Cell variant in Ependymal tumours is rare. We aim to compare the features, clinical outcomes of Clear Cell variant with the Classic pathology of grade 3 intracranial Ependymal tumours in Pakistan.

Methods: A retrospective cohort study conducted at the Department of Neurosurgery, Aga Khan University. The medical record files from 2003 – 2013 were reviewed, MRI/C.T scans and Histopathological slides of WHO grade III Ependymal tumours were reviewed. Analysis was done on SPSS 20.

Results: There were 09 cases of clear cell variant and 23 cases of classic Anaplastic Ependymoma.
The median age of Clear Cell variant was 52 years (range 24years-72 years),whereas of Anaplastic Ependymoma was 37 years (range 3 months to 65 years).
Symptoms included Headache 66% in CCE and 63% in AE, Seizures 30% in CCE and 22% in AE, and raised ICP in 30% in CCE and 54% of AE. CCE was Supratentorial in 70% cases, intracranial Anaplastic Ependymoma was supratentorial in 58% of cases. Gross Total Resection was achieved in 55% cases in CCE and 26% cases in AE. Sub-total resection was done in 45% cases in CCE and 65% in AE. Radiotherapy was given in 55% patients in CCE and in 52% in AE. Recurrence was there in 77% cases of CCE and 70% in AE. Repeat Surgery was done in 30% cases of CCE and 34% cases of AE. Median Progression free survival was 9 months (range 3-28 months), and Overall survival was 13 months (range 3-41 months) in CCE. Median Progression free survival was 14 months (range 0.5-53 months), and Overall survival was 18 months (range 1.5- 36 months) in AE.

Conclusion: Clear Cells in Grade 3 Ependymal tumours are found mainly in adult population. Supra-tentorial show worse progression-free and overall survival than Anaplastic Ependymoma. Metastasis and spinal drop mets are less frequently seen in Clear Cell Ependymal tumours. Overall survival is significantly worse in our part of the world for Grade 3 Ependymal tumours.

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LINAC RADIOSURGERY FOR BRAIN ARTERIOVENOUS MALFORMATIONS: SINGLE INSTITUTIONAL EXPERIENCE FROM SAUDI ARABIA

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Background: We present clinical outcome, obliteration rates and predictor factors of treatment success following Linear accelerator radiosurgery for brain AVM treated at King Fahad Medical City.

Methods: Collection of demographic data, AVM and treatment characteristics along with clinical and radiographic follow up information was done for 13 patients who underwent LINAC radiosurgery for brain AVM

Results: Patients included 7 males and 6 females with median age of 22 years. Intracranial haemorrhage was a presenting feature in 7 (54 %) patients. Prior embolization was done in 10 (77%) patients. The mean AVM score was 0.97 with 3 patients having AVM score ≥ 1 with mean Spetzler-Martin grade of 2.7 and 8 (62%) patients having grade 3 or more. Median follow up was 30 months. Mean dose delivered was 21.1 Gy in single fraction. Complete obliteration of AVM nidus was achieved in 9 (70%) patients while 4 patients (30%) had partial obliteration. Six patients (67 %) achieved complete obliteration among 9 who had AVM score of less than 1. Post radiosurgery neurological deficit occurred in only one patient in form of right temporal field loss.

Conclusion: Linear accelerator based radiosurgery is promising treatment option for brain AVMs in majority of cases with reasonable adverse effect profile.

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MALIGNANT OVARIAN GERM CELL TUMORS: CLINICOPATHOLOGICAL FEATURES AND SURVIVAL OUTCOMES

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Purpose: To review the clinicopathological features treatment and survival outcomes of patients with malignant ovarian germ cell at tumour.

Methods: 109 patients with histological diagnosis of ovarian germ cell tumour treated at SKMCH from January 2007 to December 2013 were identified from hospital Database. Patients were staged according to FIGO 2008 classification. Overall survival (OS) and Disease free survival (DFS) were calculated using Kaplan Meier method.

Results: The median Age was 20 years (range 4-54). The histological subtypes included Dysgerminoma 42%, mixed germ cell 25%, Yolk sac tumour 18%, Teratoma 13% and embryonal carcinoma 2%. 85% of them had conservation surgery with preservation of the contralateral ovary and uterus .Stage wise distribution was as follows Stage 1 (38%), II (7%), III (25%), and IV (30%). The majority of the patients (84%) received postoperative combination chemotherapy while 16% were managed with surgery alone. The most common chemotherapy regimen was BEP. 89 patients had a complete response, 14 had partial response and 1 had progressive disease. The 5 years Overall survival and Disease free survival were 91% and 88% respectively.2 deaths were associated with progressive disease and 3 died of chemotherapy toxicity. During a median follow up of 3.4 years, 5 patients had disease progression and all of them were rescued with platinum based chemotherapy of note 2 patients developed secondary AML during follow up.

Conclusions: Malignant ovarian germ cell tumours have a good prognosis and Fertility sparing surgery is possible in majority of cases. BEP regimen has excellent activity and acceptable toxicity.

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ENDOMETRIAL STROMAL SARCOMA

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Endometrial stromal sarcomas are rare gynecological malignant tumours arising from the uterine stroma. There are hormone sensitive tumours that form a spectrum from benign tumours with good prognosis to malignant tumours with poorer prognosis. There are no reports from this rare malignancy from Pakistan.

We report experience with 29 cases of Endometrial Stromal Sarcoma that presented to our institution between 1995 to 2015. Mean Age was 40 years. There were 36% patients who had stage I disease compared to 10% with Stage II, 41% with Stage III and 23% with Stage IV disease. Median follow-up duration was 19 months. Clinicopathological characteristics, treatment modalities used and oncological outcomes of these tumours were assessed.

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FOLLOW-UP OF INDETERMINATE PULMONARY NODULES IN OSTEOSARCOMA PATIENTS, DOES IT REALLY MATTER?

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Background: Primary osteosarcoma metastasizes most frequently to the lung. Computed tomography (CT) used in initial staging workup often identifies small, un-calcified nodules of uncertain clinical significance which are described as indeterminate. The aim of the study was to establish the outcome of these indeterminate nodules on subsequent follow-up.

Patients & Methods: We retrospectively reviewed chest CT scans of 67 osteosarcoma patients who had baseline CT examination back from April 2010 and follow-up till April 2015. 5 patients out of 67 had metastatic pulmonary nodules on baseline imaging and were excluded from the study. Clinical notes were followed for 5 years post baseline imaging.

Results: A total of 17/62 (27.4%) patients had indeterminate pulmonary nodules on baseline CT chest; 11 of these were </=4mm in size and 6 were >4mm but <10mm. In 12/17 (70.58%) patients, indeterminate nodules progressed to metastatic disease. However, only in 1/17(5.88%) mets were in the area of the original indeterminate nodule and the rest of 11/17(64.7%) patients had lung met remote from the site of indeterminate nodule. In 3/17(17.6%) patients, nodules remained stable till last follow up while in 2/17(11.76%), the nodules regressed.

Conclusion: Presence of indeterminate nodules on baseline study could pose a significant risk of development of pulmonary metastasis on subsequent follow-up.

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GOOD DEATH; PERSPECTIVES IN PAKISTAN

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Objective: This study is aimed to review the validity of TFHCOP good death perception criteria in Muslim patients and health care providers of Pakistan and to identify and describe the difference in the perception of Good Death perspective of the two groups.

Study design

Descriptive study

Place and duration of study

Oncology Department, Central Military Hospital, Rawalpindi; from September 1, 2015 to October 22, 2015.

Material and methods: A total of 100 participants from different age groups and from different cities of Pakistan were included in the study. Sample was taken by random sampling technique. We used 8-questioned questionnaire based on the principles of TFHCOP good death definition and perspectives of good death in Muslim patients (a study conducted in North West Armed Forces Hospitals, Tabuk, Saudi Arabia). We used descriptive statistics to analyse questionnaire responses.

Results: On average, 50% participants agreed on principle one. 74%, 100%, 91%, 97%, 98%, 96% and 86% participants agreed on principle 2, 3, 4, 5, 6, 7 and 8 respectively. Total of three domains measured minimal difference in patients and health care professional perspectives. Participants identified two more domains. The first domain was related to Faith in Allah Almighty and the second domain as related to Importance of family security over treatment/death.

Conclusion: Several aspects of good death, as perceived by western and Arab communities are not recognized as being important and ethical by many Muslim patients and health care professionals in Pakistan. Furthermore, our study introduces two new components of Good Death in Muslim society of Pakistan.

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DEVELOPING COMPETENCY OF FUTURE PHARMACISTS THROUGH HOSPITAL BASED PHARMACY INTERNSHIP PROGRAM IN SHAUKAT KHANUM CANCER HOSPITAL-KARACHI DIAGNOSTIC CENTRE & CLINIC

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Introduction: Scope of Pharmacy Profession is quite broader involving both traditional role of Dispensing & modern role of Clinical services including medication reviews, patient counselling, providing Drug Information & point of care Pharmacy Services therefore Pharmacists are the experts, considered as primary health professionals who optimize medication use for the sake of patient benefit. In order to develop skills of Pharmacists in the preliminary stages a pharmacy based internship program is designed at KDC&C Pharmacy to involve them in clinical practice & polish their clinical & operational skills so that their skills gained are positively welcomed in the Pharma market & helping them to secure a better professional career in the future.

Aims & Objectives: To develop competency of future pharmacists in order to polish their skills & to make them productive for the profession as well as for patients.

Materials & Methods: Pharmacy Internship program at KDC&C Pharmacy started in January 2012.Test is conducted on bi-annual basis in the month of June & December each year & depending upon test scores, interview score & their GP, merit list is prepared & altogether 24 Pharmacy interns are selected each year who get one month orientation in a pair of 02 pharmacy interns each month. Program is based on 4 basic areas orientation i.e. Clinical Services, Aseptic Services, Dispensing Services, Inventory Control & monitoring each on weekly basis. Major emphasis is given to Clinical part where a pharmacy intern is full time accompanied with a Medical officer as an observer to see whole process of patient therapy starting from diagnosis till treatment, follow ups & patient counselling. In operational part they are being taught prescription review, Dispensing, Counselling; Inventory monitoring, Compounding & Expiry Control. In Aseptic Services chemo mixing & aseptic techniques demonstration has been provided to all interns along with presentation & videos by training facilitators. A task based roster has been made for interns where different drugs & diseases have been given to interns for presentation on daily basis for 1hour session & presentations on different topics are also given to interns by pharmacists & Pharmacy technicians on daily basis. In the end a calculation Quiz & drugs based quiz has been taken. A final evaluation has also been taken before awarding them certification, verbally or written as appropriate & scores have been awarded to evaluate performance of interns. Comments also taken from interns before completion if internship in order to improve the program further. Attached is the scoring criterion developed for internship validation.

Results: Total of 72 Pharmacy interns trained from January 2012 till September 2015.Percentage calculated after interns' evaluation is found to be 83.5%. Few interns left in between or prior to joining internship due to their jobs confirmations which are excluded from total of 72.

Conclusion: Provision of Pharmacy Internship programs at the start of pharmacist career by state of the art organizations are of great importance in providing them orientation of available options in the field of Pharmacy as well as improving their skills in the profession so that they could be better Pharmacists & better Health Care Providers, which ultimately benefits patients & medical profession at large