1. THE FIRST APPLICATION OF TEAM BASED LEARNING IN A SAUDI ARABIAN MEDICAL SCHOOL: A SINGLE CENTRE EXPERIENCE OF TEACHING PATHOLOGY COURSE OF NEUROSCIENCES

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Background: Instructional strategies employed for the teaching of pathology traditionally include lectures, demonstrations, practical classes; problem based learning and clinico-pathological conference. Recently team based learning (TBL) as an instructional strategy has gained acceptance in a variety of undergraduate medical courses. TBL is a student centred instructional strategy providing students with an opportunity to apply their knowledge through a series of activities comprising of individual work, team work and problem solving assignments.

Aims: We evaluated the effect of TBL on student learning and correlated it with the student's performance in summative assessment in pathology course of neurosciences. Moreover the student's perceptions regarding the process of TBL were assessed by online survey.

Methods: In this study 156 students of year three neuroscience block were divided into seven male and seven female groups comprising of 11–12 students in each group. The TBL was introduced during the six weeks of this block and a total of eight TBL sessions were conducted during this duration.

Results: We found that students performed better while working in teams as compared to individual testing. The male students performed better in the TBL and had a more favourable impact on their grades in the summative examination. The students who attended the TBL sessions performed better in the summative examinations as compared to those who did not. There were favourable student responses regarding the content covered in TBL as well as the process of TBL which led to improvement in communication and interpersonal skills.

Conclusions: We conclude that implementing TBL strategy increased student's responsibility for their own learning and helped the students in bridging the gap in their cognitive knowledge which was demonstrated by their improved performance in the summative assessment.

Take-home message: The learning in TBL helped the students in improving their knowledge and bridging the cognitive gaps in a traditionally difficult neurosciences block.

2. FREQUENT MICROSATELLITE INSTABILITY AND ABSENT MLH1 EXPRESSION IN SOLID-TYPE POORLY DIFFERENTIATED ADENOCARCINOMA OF THE STOMACH

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Background: Despite numerous reports indicating a significant relationship between intestinal-type histology and microsatellite instability (MSI), we demonstrated frequent MSI in solid-type poorly differentiated adenocarcinoma and papillary adenocarcinoma of the stomach. The detailed correlations between solid-

type poorly differentiated adenocarcinoma and MSI remain obscure.

Aims: The aim of the present study is to clarify clinicopathologic features of microsatellite-unstable solid-type poorly differentiated adenocarcinoma.

Methods: Microsatellite status, mutation of KRAS and BRAF, expression of mismatch repair proteins and Epstein-Barr virus infection were examined in 75 poorly differentiated adenocarcinomas (31 solid-type, 21 nonsolid-type and 23 signet-ring cell carcinomas) as well as clinicopathologic features.

Results: MSI and absent MLH1 expression were detected in 52% (16/31) and 58% (18/31) of solid-type poorly differentiated adenocarcinoma, respectively, whereas 4.8% (1/21) and 4.8% (1/21) in nonsolid-type poorly differentiated adenocarcinoma and 8.7% (2/23) and 8.7% (2/23) in signet-ring cell carcinoma, respectively. MSI-positive solid-type poorly differentiated adenocarcinoma was significantly related with older age, women, lower third location, presence of concordant glandular component, tumor-infiltrating lymphocytes, Crohn's-like lymphoid reaction and absent MLH1 expression.

Conclusions: MSI-positive solid-type poorly differentiated adenocarcinoma has peculiar clinicopathologic characteristics. Moreover, MSI with absent MLH1 expression may play an important role on the development of solid-type poorly differentiated gastric carcinoma in the elderly, especially in the women.

3. THE ROLE OF PIN1 IN HEPATOCELLULAR CARINOMA IS ASSOCIATED WITH TP53 STATUS

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Introduction: Phosphorylation of proteins on serine/threonine residues that precede proline (pSer/Thr-Pro) is specifically catalysed by the peptidyl-prolyl cis-trans isomerase PIN1. PIN1-mediated prolyl-isomerization potentiates the progression of cell cycle and cell proliferation through the regulation of target genes including TP53 protein.

Aims: We investigated the possible relationship between role of PIN1 and TP53 mutation status in hepatocellular carcinoma (HCC).

Methods: We used synthetic small interfering RNA to silence PIN1 gene expression in TP53 wild and TP53 mutated HCC cell lines, and then evaluated cell proliferation, migration and invasion. In addition, we analysed TP53 mutation and correlated with PIN1 expression and clinical significance in 43 hepatocellular carcinoma patients.

Results: PIN1 and TP53 expression in TP53 mutated HCC cell lines were higher when compared to those of TP53 wild HCC cell lines. Conversely, enzyme activity of PIN1 was higher in TP53 wild HCC cell lines than that in TP53 mutated HCC cell lines. Inhibition of the PIN1 expression by the siRNA significantly enhanced the cell proliferation, migration and invasiveness in TP53 wild HepG2 cells. Conversely, inhibition of the PIN1 in TP53 mutated HLE cells significantly decreased cell proliferation, migration and invasion. Overexpression of PIN1 was strongly associated with TP53 mutation. Positive expression of PIN1 with wild TP53 status in HCC patients predicted favourable relapse-free survival by univariate analysis.

Conclusion: Our results suggest that PIN1 plays role in cancer cell proliferation, migration and invasion in different manners according to the *TP53* status in HCC.

4. BIPOLAR RADIOFREQUENCY ABLATION FOR THYROID NODULES WITH EFFECTIVE INDUCTION OF SUFFICIENTLY LARGE LESIONS WITHOUT DANGER TO SURROUNDING STRUCTURES (EX VIVO MORPHOLOGICAL EVALUATION)

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Background: Currently, minimally invasive procedures like radiofrequency ablation (RFA) are suitable for management of both benign nodules and low-risk thyroid malignancies as well. **Aims:** To assess the basic technical feasibility of RFA in papillary thyroid carcinoma nodules.

Methods: Measurements were done in 81 human thyroid glands. The maximal time span between the thyroid resection and the experiments was 15 minutes. Thermal energy was delivered through an applicator with a diameter of 1.3 mm (18-gauge), a shaft length of 235 mm, and an active tip length of 10 mm. A power of 20 watts was applied for 10 seconds. Clearly demarcated portions of the visibly damaged area were regarded as necrosis and measured as area of the ellipsoid.

Results: The median area of unaffected papillary carcinoma nodule ($n=45$) was 84.8 mm^2 ($Q25=62.8$, $Q75=117.8$), and for benign nodules ($n=36$) was 95 mm^2 ($Q25=50.3$, $Q75=135.7$). The median area of 19.6 mm^2 ($Q25=9.4$, $Q75=28.3$) was coagulated after RFA for carcinoma, and the median area of 20.8 mm^2 ($Q25=17.3$, $Q75=34.4$) was coagulated after RFA for benign nodules. In the histological examination of thermolesion, HE-staining revealed tissue necrosis in the area between electrodes, shrinkage of the thyroid follicles next to active tips, colloid condensed, and the collagenous stroma appeared slightly haematoxyphilic, blood vessels were spastic and lymphatic vessels dilated.

Conclusion: RFA induces reproducible lesions in tumour tissue, but for the radical treatment of papillary thyroid carcinoma nodules further research should be proceed aimed to enhance the effectiveness. Intrinsic morphological characteristics (capsule, fibrosis, calcification or cysts, histological pattern or background pathology) have no effect on the extension of necrotic area (comparing extension of necrotic areas in malignant vs benign nodules: $p=0.065$). Tumour size did not correlate with the extent of damage as well.

5. HAEMOPHAGOCYTIC LYMPHOHISTIOCYTOSIS

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Haemophagocytic lymphohistiocytosis (HLH) is a rare syndrome triggered by pathological immune activation, usually due

to abnormal natural killer (NK)/T cell function. It results in uncontrolled hypercytokinaemia leading to end organ damage and is often fatal.

We present the case of Mr X, a 43-year-old man diagnosed with HLH, 6 weeks after a febrile illness. He fulfilled 6 of the 8 criteria for diagnosing HLH, i.e., fever, splenomegaly, cytopenias, hypertriglyceridaemia/hypofibrinogenaemia, haemophagocytosis in bone marrow and hyperferritinaemia.

Mr X also had positive PCR for Epstein-Bar virus (EBV) and a concurrent EBV associated extranodal (gastric) NK/T-cell lymphoma, nasal type which was the probable initiator of his HLH. EBV infection alone could also have been the initiator, but NK/T-cell lymphoma is a more common trigger, as HLH occurs in up to 20% of these lymphomas.

After failing to tolerate chemotherapy he underwent an allogeneic bone marrow transplant. Initially he responded well, with no evidence of HLH or lymphoma on bone marrow biopsy, however within 6 weeks he suffered a relapse of his NK/T cell lymphoma.

This case highlights some of the common features of HLH including the nonspecific presentation and association with NK/T-cell lymphoma and EBV infection.

6. EXTRANODAL NK/T CELL LYMPHOMA, NASAL TYPE PRESENTING AS WIDESPREAD CUTANEOUS RASH

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We present a case of a 23-year-old male, recent immigrant from Afghanistan, diagnosed with extranodal NK/T cell lymphoma, nasal type. The patient presented with widespread, non-tender and non-pruritic papules and nodules throughout the body. It is an unusual presentation for this condition. Extranodal NK/T cell lymphoma, nasal type, are rare and very aggressive neoplasms, predominantly involving the upper aerodigestive tract. Extranodal sites such as skin, soft tissue and gastrointestinal tract can be occasionally involved, in which case it is mostly localised. Morphologically, the tumour cells demonstrated a diffuse growth pattern, and consisted of small to large atypical lymphoid cells with pale cytoplasm, vesicular nuclei and irregular nuclear membranes. Focally, angiodestruction and necrosis were identified. These neoplastic cells were EBV positive and demonstrated cytotoxic phenotype. T-cell receptor gene rearrangement studies showed germline configuration. This case is presented to highlight the unusual clinical manifestation of a rare and aggressive lymphoma.

7. THE CILATED MUCONOCULAR PAPILLARY TUMOR OF THE LUNG

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Background: Ciliated muconodular papillary tumors (CMPT) are newly defined low-grade malignant tumors, characterised as papillary tumors consisting of ciliated columnar, goblet, and basal cells.