

## Abstract: Para Clinical Sciences

### Comparative Sensitivity of Cartridge Based Nucleic Acid Amplification Test (CBNAAT), Auramine Rhodamine for ZN Stains in Diagnosis of Tubercular Lesions

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#### INTRODUCTION

Tuberculosis control is complicated by the emergence of multidrug resistant tuberculosis (MDR) and its diagnosis is compromised due to paucibacillary nature of the disease with low bacterial load in extra pulmonary specimens and non-specific signs and symptoms. The study was done to evaluate efficacy of Xpert MTB/RIF assay in diagnosing *Mycobacterium tuberculosis* in pulmonary and extra pulmonary samples and to diagnose *Mycobacterium tuberculosis* in suspected tubercular lesions by CBNAAT, ZN stain, and Auramine-rhodamine stain.

#### METHODS

A total of 150 eligible patients attending the hospital associated with Government Medical College, Kota, with symptoms suggestive of tuberculosis and who consented for present study, were investigated for diagnosis of tuberculosis using digital chest radiograph.

#### RESULTS

Out of total, only 77 samples were positive for *Mycobacterium tuberculosis* by Gene Xpert MTB/RIF, 49 samples were positive for *Mycobacterium tuberculosis* by ZN stain and 52 samples were positive by Auramine rhodamine stain. Three pulmonary samples showed Rifampicin resistance by gene Xpert MTB/RIF indicating MDR tuberculosis and suggesting an approximate incidence of MDR cases at around 6.5% (3/46).

#### CONCLUSION

Gene Xpert MTB/RIF is a simple and reliable technique for early diagnosis of both pulmonary and extra pulmonary tuberculosis with high sensitivity and specificity not only in smear positive cases but also in smear negative cases.

### Two Hours Plasma Concentration of Rifampicin in Patients of Newly Diagnosed Pulmonary Tuberculosis with and without Diabetes Mellitus on Anti-Tuberculosis Therapy at a Tertiary Care Hospital

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#### INTRODUCTION

Diabetes Mellitus (DM) has been reported to influence pharmacokinetics of anti-tuberculosis drugs by causing variability in absorption, leading to tuberculosis (TB) treatment failure or relapse. The present study aims to estimate and compare Rifampicin (C2hr) concentration in newly diagnosed pulmonary TB patients with and without DM.

#### METHODS

A cross-sectional study was conducted on 54 newly diagnosed pulmonary TB patients with and without DM on anti-TB drug therapy as per RNTCP. Blood sample was collected 2 hours post dose administration. Estimation of Rifampicin concentration was done using HPLC.

#### RESULTS

Rifampicin plasma levels at 2 hours post drug administration (C2hr) were below reference ( $> 8 \mu\text{g/ml}$ ) in 24 (100%) of diabetics and 23 (77%) of non-diabetics. The mean Rifampicin plasma C2hr  $\pm$  SD of diabetic TB patients was significantly lower than the non-diabetic TB patients with values of  $3.52 \pm 0.96$  and  $5.79 \pm 1.73 \mu\text{g/ml}$ . Negative correlation was seen between RBS (mg/dl) and Rifampicin plasma levels in diabetic and non-diabetic TB patients with Pearson's correlation coefficient ( $r$ ) of  $-0.74$  and  $p$ -value  $< 0.01$  and  $-0.53$  and  $p$  value  $< 0.01$ , respectively.

#### CONCLUSION

Higher doses of Rifampicin may be required to achieve therapeutic concentration and should be considered for TB therapy in patients of TB with DM as comorbidity.

## Isolation of Dermatophytes in Soil Samples Using Hair Baiting Technique

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### INTRODUCTION

Dermatophytes are filamentous, septate molds closely related to keratinophilic fungi which are capable of invading keratinized tissues of skin and its appendages like hair and nail. The increase in prevalence of dermatophytosis in India is attributed to poor diagnosis, improper treatment and administration negligence. This study was carried out to know the profile of the dermatophytes in soil setting of Ajmer area.

### METHODS

A total of five samples (5 gm each) of garden soil were collected from each of the randomly selected 10 sites of Ajmer region in sterile polythene bags and pH of soil was recorded. All samples were processed in the laboratory using hair bait technique and incubated at  $28 \pm 2$  °C for 3-4 weeks. Fungi grown were subcultured onto SDA with Chloramphenicol and SDA with Cycloheximide and identified using standard mycological procedures.

### RESULTS

Out of 50 soil samples cultured, 28 (56%) samples were positive for keratinophilic fungi. 64.28% were dermatophytes and 12.8% were non-dermatophytic fungi. The predominant isolate among dermatophytes was *Trichophyton* species (64.28%) where as *Aspergillus* species (12.8%) was the commonest non-dermatophyte.

### CONCLUSION

*Trichophyton* species mainly corporis, were the most commonly isolated dermatophyte in the present study suggesting soil as a source of dermatophytic infections.

## A Study of Immuno-histochemical Markers Estrogen Receptor, Progesterone Receptor, Her2/neu Receptor in Ovarian Neoplasms

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### INTRODUCTION

Among genital malignancies, ovarian cancer has the most increased mortality rate. ER, PR, and HER2/neu expression levels depend on tumor histological grade and stage of disease and are variable between tumors of the same grade. The present study was aimed to study the clinicopathological parameters in ovarian tumors with reference to age, histologic type and grade, and their correlation with ER, PR, and HER2/neu status.

### METHODS

This prospective study was conducted on 100 resected ovarian tumor specimens received in the Department of Pathology, JLN Medical College, Ajmer. Sections were stained and examined for presence of ovarian tumor, histological type, grade and for ER, PR, and HER2/neu status. Immuno-histochemistry was performed.

### RESULTS

Out of 100 cases, 72 cases were benign, 03 cases were borderline, and 25 cases were malignant. Malignant cases showed maximum positivity with ER, PR, and HER2 as 61.76%, 68%, and 100%, respectively. ER, PR, and HER2/neu positivity in serous epithelial tumors was 76.47%, 84%, and 90% and in mucinous tumors was 20.59%, 12%, and 10%, respectively. ER and PR positivity in endometrioid tumor was 2.94% and 4%, respectively. Majority of positive ER, PR, and HER2/ neu receptors was observed in age groups of >40 years as 64.71%, 64%, and 85%, respectively. ER, PR and HER2/ neu positivity seen in higher grade and stage tumors as 76.19%, 76.47%, and 70% in grade 3 and stage 3 tumors, respectively.

### CONCLUSION

The higher expression of ER, PR, and HER-2/neu is associated with progression of invasive cancer, higher grade and stage of ovarian tumors, higher age group, and multiparity.

## **Seroprevalance of Dengue and Chikungunya Co-infection in JLN Medical College and Associated Group of Hospitals, Ajmer**

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### **INTRODUCTION**

India is an endemic country for dengue and chikungunya, every/ alternative year. The study was done to observe the seroprevalance of dengue and chikungunya co-infection, early diagnosis, and their seasonal trends.

### **METHODS**

This was a prospective laboratory based study conducted from March 2018 to October 2019. Clinically suspected patients of dengue and/or chikungunya from all the outpatient and inpatient departments were enrolled as cases. Serum samples were tested for IgM antibodies of dengue and chikungunya by ELISA method.

### **RESULTS**

Out of 965 samples, 156 (16.16%) were found to have only dengue antibodies, 88 (9.11%) only chikungunya antibodies and 83 (8.6%) had both the antibodies. With co-infection diagnosed than the total number of dengue and chikungunya positive were 239 (24.76%) and 171 (17.72%), respectively. Majority of the patients belonged to the age group of 21-30 years, followed by 31-40 years with preponderance of males over females.

### **CONCLUSION**

The occurrence of dengue, chikungunya, and their co-infection were more in post-monsoon season, middle age group, and in males, so vector control, personal protective measures, and early diagnosis is very important to reduce mortality rate. As the clinical features of dengue and chikungunya virus infections are mostly similar, so it is advisable to test for both viruses.

## **Clinico-histopathological Study of Resected Nephrectomy Specimen at a Tertiary Care Hospital**

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### **INTRODUCTION**

Nephrectomy is now a days a common procedure which is done for almost all malignant tumors as well as for some benign conditions. The aim of the study was to study the histomorphological spectrum and frequency of various lesions in nephrectomy specimens and their correlation between various histopathological lesions with age, sex, clinical presentation, and reason justifying resection.

### **METHODS**

The present prospective study was conducted in the Department of Pathology, Government Medical College, Kota. The specimens of surgically resected kidneys sent for routine histopathological evaluation were studied.

### **RESULTS**

Out of the total 100 cases, 14 cases (14%) were neoplastic and 86 (86%) cases were non-neoplastic. Youngest patient was 09 year old and oldest was of 81 years. Highest cases of nephrectomy were between age group 21-30 years. In both neoplastic and non-neoplastic pathology, females were more commonly affected than males. Out of 86% of non-neoplastic lesions, females were 45% (45 cases) while males were 41% (41 cases). Out of 14% cases of neoplastic lesions, females were 08% (08 cases) and males were 06% (06 cases).

### **CONCLUSION**

Non-neoplastic lesions were found to be more common. Highest incidence of non-neoplastic lesions was found to be in third decade while that of neoplastic lesions was found in sixth and seventh decade. Chronic non-specific pyelonephritis was the commonest non neoplastic and renal cell carcinoma (clear cell type) was commonest neoplastic lesion.

## **An Observational Study to Evaluate the Correlation of Ki-67 (MIB-1) Proliferation Index and Progesterone Receptor Status with Histological Grade of Meningioma**

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### **INTRODUCTION**

Most meningiomas are benign, some of them are associated with a less favorable clinical outcome. Histological grade, progesterone receptor (PR) expression, and Ki-67 index are predictive for recurrence, so useful for prognosis and management. The aim of the present study was to correlate the MIB-1 labelling index and progesterone receptor status with grades of meningioma.

### **METHOD**

A retrospective review of the forms, slide, and result of 60 cases of meningioma received at the Department of Pathology at Dr SN Medical College during 2 year duration was performed. All H and E stained sections were reviewed and graded according to WHO criteria. Immunohistochemical analysis for PR and Ki-67 was performed on formalin fixed paraffin embedded samples.

### **RESULTS**

Mean MIB-1 labelling index showed an increase with increasing grade of tumor (mean MIB-1 LI 1.09 for grade I, 7.2 for grade II and 34.67 for grade III). The difference in mean MIB-1 LI among grade I and grade II was statistically significant ( $p < 0.05$ ). A significant difference in PR expression among grades ( $p < 0.05$ ) was observed. Mean MIB-1 labelling index of PR negative tumors (6.7) was much greater than that of PR positive tumors (0.99). This difference in mean MIB-1 LI among PR positive and negative tumors was statistically significant ( $p < 0.05$ ).

### **CONCLUSION**

MIB-1 LI in PR negative tumors was significantly greater compared to PR positive tumors. Thus, a combination of PR and MIB-1 can be useful to delineate aggressive cases from benign and are especially useful in borderline cases when histology is difficult.

## **To Evaluate the Status of Expression of Bcl-2 and Ki-67 Immuno-histochemical Markers in Various Endometrial Lesions**

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### **INTRODUCTION**

The proliferative activity of endometrium is kept balanced by apoptotic activity. The aim of the study was to find out the status of the apoptotic and mitotic activity in various endometrial lesions by using Bcl-2 marker, an anti-apoptotic gene involved in the regulation of apoptosis and Ki-67, a recognised indicator of cell mitotic activity.

### **METHODS**

A total of 70 endometrial samples were studied which included dilation and curettage and hysterectomy specimens received in the Department of Pathology of a medical college, Jodhpur.

### **RESULTS**

The Bcl-2 and Ki-67 expression included 28.5% of proliferative endometrium, 20% of secretory endometrium, 14.3% of disordered proliferative phase, 14.3% of hyperplasia without atypia, 8.6% of atypical hyperplasia, and 14.3% of carcinoma endometrium. The results of Bcl-2 expression was increased in proliferative phase, decreased in hyperplasia followed by disordered proliferative phase and carcinoma endometrium and least in secretory phase. Ki-67 expression was seen maximum in proliferative phase and atypical hyperplasia with least expression in secretory phase. Comparing Bcl-2 and Ki-67 expression in all lesions showed positive correlation in proliferative phase showing there is high anti apoptotic and mitotic activity in proliferative phase. In carcinoma there was negative correlation, where the expression of Bcl-2 decreased with increase of the grade of the tumor and Ki-67 expression increases with the grade of the tumor.

### **CONCLUSION**

The failure of the apoptotic mechanism to remove the damaged and mutated cells combined with the proliferating ability of the neoplastic cells can lead to tumor formation.

## **Assessment of Chronological Age by Studying Radiological Closure of Cranial Sutures, Fusion of Sternum and Medial Epiphyses of the Clavicle in Living Individual between Third to Seventh Decade in Jodhpur Region**

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### **INTRODUCTION**

Age estimation from radiological study of bones is often required in medico-legal practice. Correct age is essential in legal medicine, medical, social, and administrative matters and to validate documents.

### **METHODS**

Each individual was subjected to the following radiological examination: skull, sternum, and clavicle in antero-posterior and lateral view and all the observations were noted on a common standard proforma filled up for every case and statistically analysed.

### **RESULTS**

In the present study, it was found that sagittal suture fusion starts at the end of 31-40 years and is completed at 51-60 years; coronal suture fusion begins at 31-40 years in lower half and 41-50 years in upper half and is completed by the age of 51-60 years. For sternum, fusion of xiphoid with body of sternum is at 36 years and completed by 45 years. For clavicle, onset of fusion is at 20 years and fusion at 22 years.

### **CONCLUSION**

Epiphyseal union of medial end of clavicle can be used to ascertain age between 20-25 years alongwith other bony parameters. Xyphisternum and manubrium starts union with body of sternum at 36 and 47 years, respectively and fuses at 44 and 54 years. These procedures being quick and non-invasive, have fair degree of accuracy.

## **Status of Hepatitis A Virus and Hepatitis E Virus Infection in the Patients Presenting with Acute Viral Hepatitis Attending a Tertiary Care Hospital in Jhalawar, Rajasthan**

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### **INTRODUCTION**

Liver disease due to hepatitis virus is a major public health problem in the world affecting millions of people worldwide and co-infection may lead to serious complications. The study was conducted to see prevalence and co-infections of *hepatitis A* and *E* to implement vaccination strategies and control.

### **METHODS**

All patients suspected of acute viral hepatitis attending the Departments of Medicine, Paediatrics, and Obstetrics and Gynaecology were included in this study, after the approval from the institutional ethics committee. IgM antibodies to *HAV* and *HEV* were detected employing ELISA.

### **RESULTS**

A total of 138 patients were found to be suffering from acute viral hepatitis either due to *HAV* or *HEV*. Co-infection was found to be 3.74%. The overall prevalence of *HAV* and *HEV* infection was predominantly higher in paediatric population and adults, respectively. The seropositivity rate of *HAV* and *HEV* in urban (25.64% and 31.79%) population was slightly higher than rural areas (23.61% and 26.38%). *HAV* and *HEV* were seen to be prevalent all around the year and mainly seen towards the end of monsoons and beginning of winters and more so even the co-infection showed a similar seasonal trend.

### **CONCLUSION**

Data obtained from this study will aid in planning of future vaccination strategies and better sanitation program.

## **An Observational Prospective Study of Prescription Pattern of Antimicrobial Agents Used in Neonatal Sepsis in Tertiary Care Hospital in Western Rajasthan**

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### **INTRODUCTION**

Neonatal sepsis is a clinical syndrome manifested by systemic signs of infection and isolation of bacterial pathogens from bloodstream. Neonatal mortality rate in Rajasthan is quite high and data on utilization of antimicrobials for neonatal sepsis is scanty, therefore, we planned to conduct this study.

### **METHODS**

The study was conducted in NICU of a tertiary care teaching hospital in Jodhpur, Rajasthan. 250 neonates of either sex admitted to NICU with suspected or confirmed sepsis were included while those neonates admitted in other wards were excluded from the study. The selected patients were followed till discharge from NICU.

### **RESULTS**

Out of the total 250 cases of neonatal sepsis, 148 (59.2%) were suspected and 102 (40.8%) were confirmed (culture positive) cases. Majority of patients received 2 or 3 antibiotics during the course of therapy. Almost all (97.95%) antibiotics were prescribed by generic names and 77.7% were prescribed from EDL. *Staphylococcus aureus* was the most commonly isolated gram positive organism in 32.35% cases, followed by *Klebsiella*, CONS, and *Pseudomonas* in 20.58%, 16.66%, and 6.8% cases, respectively. Gram positive isolates showed maximum resistance to Ampicillin and were most sensitive to Vancomycin and Linezolid. Gram negative isolates showed maximum resistance to Ampicillin, Amoxyclav, and Ciprofloxacin and were most sensitive to Aztreonam, Imepenem, and Ticarcillin.

### **CONCLUSION**

Most commonly prescribed antibiotics were Ampicillin, Cefotaxime and Amikacin and most commonly isolated organisms were *Staphylococcus aureus* and *Klebsiella*.

## **Prevalence and Predictors of Overweight and Obesity among School Going Adolescents of Ajmer City: A Cross-Sectional Study**

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### **INTRODUCTION**

The prevalence of overweight and obesity among children and adolescents aged 5-19 years has risen from just 4% in 1975 to over 18% in 2016. According to NFHS-4 (2015-16), 20.70% female and 18.60% males are overweight and obese in India. The study was conducted to find out the prevalence of overweight and obesity and to identify its predictors among school going adolescents in selected schools of Ajmer City.

### **METHODS**

A cross-sectional study was carried out at government and private schools located within Ajmer city which were selected randomly. Adolescents were selected according to inclusion criteria. Out of 1600 study participants (10 to 19 years), 800 were from government schools and 800 from private schools. Data was collected using predesigned, pretested, semi-structured, self administered questionnaire. In each standard, the height and weight were measured using standard equipment. Data was analyzed by suitable statistics to find association of obesity with various predictors.

### **RESULTS**

The prevalence of overweight (BMI=23-24.9) was 11.63% and obesity (BMI $\geq$ 25) was 7.31%.

### **CONCLUSION**

The high prevalence of overweight/ obesity observed in adolescent age group in the present study emphasizes the need to reinforce importance of health in the early formative years of an individual's life. The measures to control childhood and adolescent obesity should involve individual, family, community, and administrative coordination.

## **Assessment of Implementation of National Airborne Infection Control Committee Guidelines at Various Tuberculosis Units under RNTCP in a District of Southern Rajasthan**

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### **INTRODUCTION**

Nosocomial outbreaks of airborne infections like tuberculosis have high rates of morbidity and mortality in the absence or with limited application of airborne infection control strategies. The aim of the study was to assess the implementation of infection control strategies.

### **METHODS**

A facility based observational descriptive study was done among selected 16 designated microscopic centres (DMC) by two stage random sampling technique for a period of 6 months by personal interview of the incharge using pretested standard questionnaire and scores were given and analysed for results.

### **RESULTS**

Out of selected 16 DMC, 6 (37.5%) belonged to rural areas, 8 (50%) were in CHC, 6 (37.5%) were located within 30 km from district TB centre, 14 (87.5%) were in government health care facilities, 5 (31.3%) had TB wards attached in the facility, and 1(6.3%) had ART centre. Out of the total score of 90 given, DMCs scored  $56.2 \pm 13.5$  (62.5%). Individual section wise mean scores being  $6.75 \pm 2.3$ ,  $26 \pm 8.5$ ,  $4 \pm 1.15$ ,  $7.4 \pm 2.15$ , and  $12 \pm 1.06$  for general hospital infection control, administrative, environmental, personal protective equipment usage and health care worker safety, and biomedical waste management, respectively.

### **CONCLUSION**

Overall implementation of TB Infection control measures according to NAICC guidelines in these DMCs were suboptimal with rating B and recommended practices are usually followed but not consistent. Thus, widespread implementation of infection control measures should be strengthened to prevent cross-contamination and transmission of diseases.

## **An Epidemiological Study to Assess Utilization of Integrated Child Development Services in Beneficiaries of Rural and Urban Areas of Bikaner**

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### **INTRODUCTION**

Integrated Child Development Services (ICDS) scheme was launched on 2<sup>nd</sup> October 1975 to improve the nutritional status of children in our country. As of now, 39.1% of children under the age of five years were found stunted, 23% wasted, and 36.7% were underweight. This study was done to assess the utilization of ICDS services among beneficiaries.

### **METHODS**

A cross-sectional study was done on 1548 beneficiaries residing in service delivery area of Rural and Urban Health Training Centre of Bikaner, to assess the utilization of the services provided under ICDS. The information was collected in a self-structured schedule, points for services and categorization of service utilization was used. Suitable statistical tests were applied.

### **RESULTS**

52.65% beneficiaries utilized at least any one service provided under ICDS. Among utilizing beneficiaries, 76.3% showed excellent, 15% average, and 8.7% poor utilization of the services. A significant association was found between comprehensive service utilization and nature of family, and level of education in rural and urban area. The main reasons for non utilization of services were “not aware of services” and “not felt need of services”.

### **CONCLUSION**

Majority of the beneficiaries utilizing the services belong to the category of excellent utilization of ICDS services, Thus, an increase in awareness and motivation to use services and benefits provided under ICDS will eventually increase utilization of ICDS services.