IBMS

INTEGRATED BASIC MEDICAL SCIENCE

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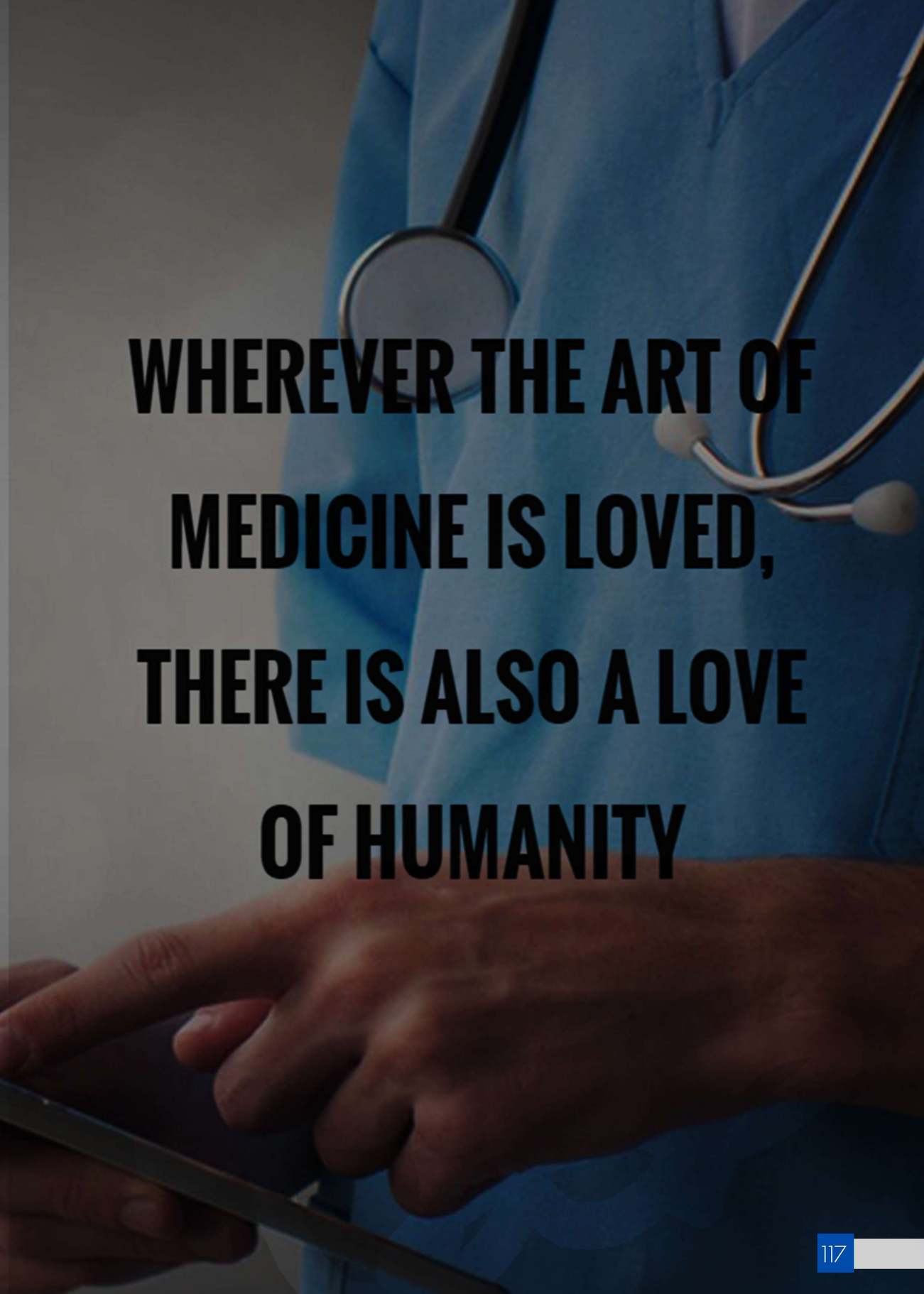
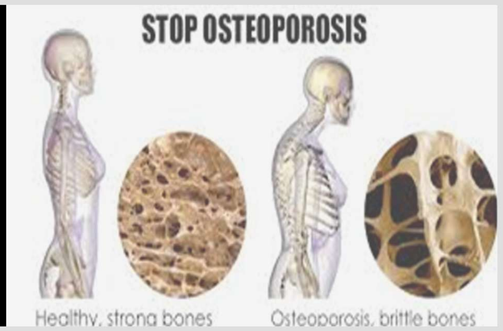
IBMS aims at identifying clinical diseases and providing solutions to them. New diseases are evolving with changing life styles especially in developing countries where the disease pattern and type are different from the developed countries. The objectives of IBMS is to collaborate with hospitals and pharmaceutical industry to fill the gap of knowledge by research and reasoning. Challenging areas are increasing mortality and morbidity of children under 5 years of age, increasing prevalence of carcinoma cases and nutritional deficiencies in women of reproductive ages leading to a cumbersome old age life.

IBMS consists of six interlinked components

- Tissue Morphology
- Genetic Mutations
- In-depth X-Ray Imaging
- Patient Management Information
- Oncology
- Geriatrics



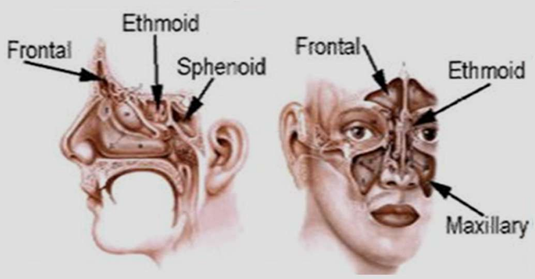
RESEARCH PORTFOLIO



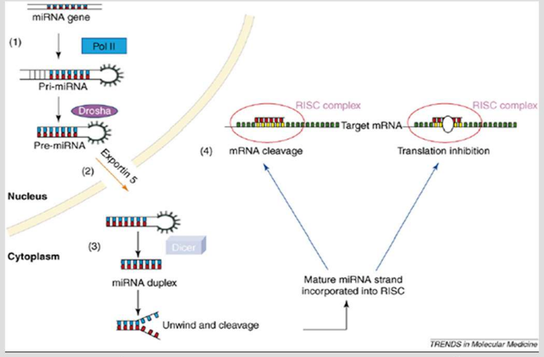
Algorithm for Polycystic Ovaries And Osteoporosis

Polycystic ovary syndrome (PCOS) is a complex hormonal disorder in reproductive-aged women. Various features of this disorder have an influence on bone metabolism giving it an unusual protective mechanism for bone health as compared to non PCOS females. The current treatment of PCOS however nullifies this bone protective effect resulting in low Bone Mass Density (BMD) in patients under treatment. As described earlier PCOS women as a result in hormone imbalance due to the disease have higher Bone Mass Density as compared to healthy females of same age group. While getting treatment for PCOS to improve fertility in these patients this protective mechanism is lost. Currently no established treatment option is available which can increase the fertility of these patients while preserving the BMD advantage. Many studies have suggested that by maintain optimum androgen – estrogen ratio in patients with PCOS, BMD and fertility both can be balanced out. No such data is available for local Pakistani population although this is amongst the most commonly occurring hormonal disorder occurring in our female population. Developing an algorithm of the results is to help early diagnosis and prevention of these disabling diseases. This criterion can be used in e-medicine and treatment plan can be established using the application after the values of the result are entered as well as be used to modify existing drugs to preserve the benefits of PCOS while increasing the fertility of the patients in collaboration with pharma industry.

Functional Endoscopic Sinus Surgery

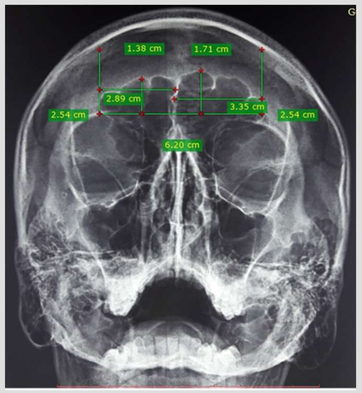


Anatomical variations are not diseases and can be present in every individual. Because of presence of these anatomical variations nearby anatomical relations of that structure changes. By considering the vast range of variations in the anatomy, every para-nasal sinus case should be planned carefully to avoid dreadful complications of surgical procedures. Variations in intranasal and sinus anatomy have been implicated in the etiology of chronic and recurrent sinusitis, and CT imaging has become an important diagnostic tool. Functional endoscopic sinus surgery has popularized the use of telescopes and has emphasized the importance of nasal endoscopy and computed tomography in the evaluation of patients with diseases of the nose and paranasal sinuses. The objective of this study is to determine anatomical variations of paranasal sinuses on CT scan and its assistance in Functional Endoscopic Sinus Surgery (FESS)



Introducing Treatment Plan for Carcinoma

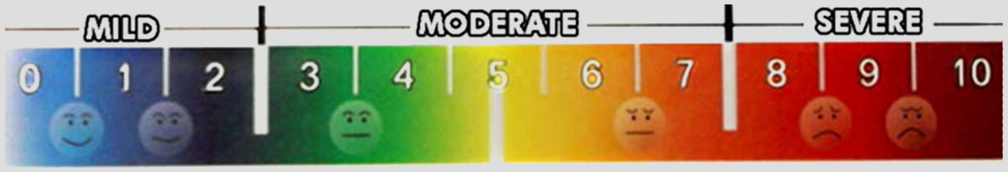
Post-transcripts formed by DNA also result in producing small RNAs which are quite recent discovered class of RNA known as microRNA (miR) that are very small ribonucleic acids which effect the function of messenger RNA. They have been proven to be involved in the normal functioning and development during embryonic life. However, over-expression of miRs are involved in several diseases of which cancers are of much concern. If the right miR is discovered for a specific disease it is predicted that anti-molecule therapy can be manufactured and the mutation that maybe taking place can be stopped before it causes unlimited damages and result in cancer of organs. One of the many cancers in woman, breast cancer is on the rise and is likely to increase in incidence due to the changing life style. We aim to identify miRs causing breast cancer and propose an anti-molecule formula to combat the deadly disease.



Identifying Blast Victims

With the rise of mass destruction and catastrophe in this era, identification of bodies has become an extremely difficult task for the investigation teams. The Forensic science experts and anthropologists are devising newer methods of identification. In cases where there are mutilated or skeletonized bodies in which soft tissue is lost, the techniques of finger printing and DNA analysis cannot be applied. Radiography of the frontal sinuses are being used to identify ethnic groups as these are present within strong bones remaining in their original shape and size even after blast injuries, putrefaction or decomposition. Every individual and ethnic group has frontal sinus variation in the size and shape. The aim is to differentiate between ethnic groups of Pakistan which will help later to identify the ethnic background of bodies who have suffered blast injuries and cannot be identified as most of their body parts have been destroyed.

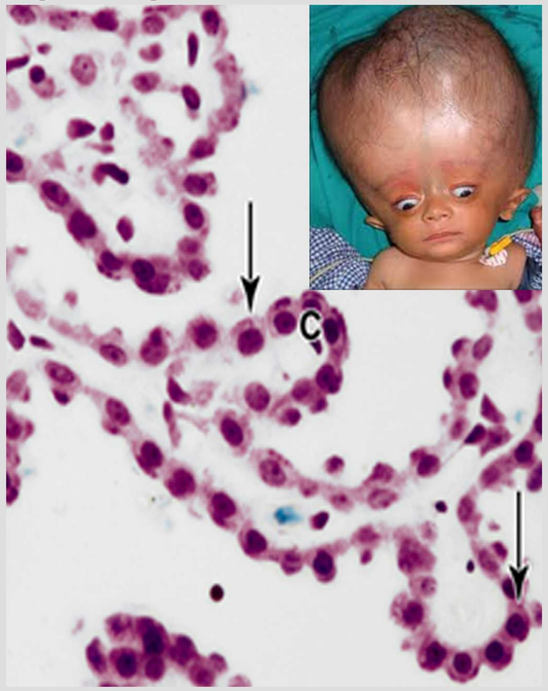
Establishing Tonsillar Grading in Sleep Apnea



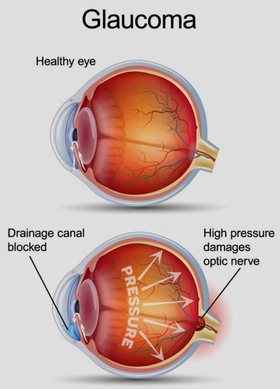
A good sleep affects the physical, mental and behavioural aspects of an individual. Disturbance in the normal biological rhythm of an individual can disrupt one's performance. Sleep disorders are many but the type that can take one's life is obstructive sleep apnea. It is therefore important to know the anatomy of involved structures that are responsible for the pathophysiology of the above-mentioned condition. To our knowledge data regarding oropharyngeal anatomy in Pakistan is very less. Obstructive Sleep Apnea (OSA) is evolving as a worldwide health epidemic and is confronting an increasing prevalence especially due to the obesity pandemic. Though extensive global prevalence facts and figures are still missing, and worldwide OSA research in standings of activity, value, and socio-economic features has not yet been revealed. Our objectives of ongoing research are to determine the morphological features of the upper airway by physical examination in patient with sleep apnea and the correlation between actual tonsil volume (by ultrasound) and Brodsky tonsillar grading and its relation with OSA Severity. A very important part of this ongoing research is to formulate a new grading system for Pakistani population.

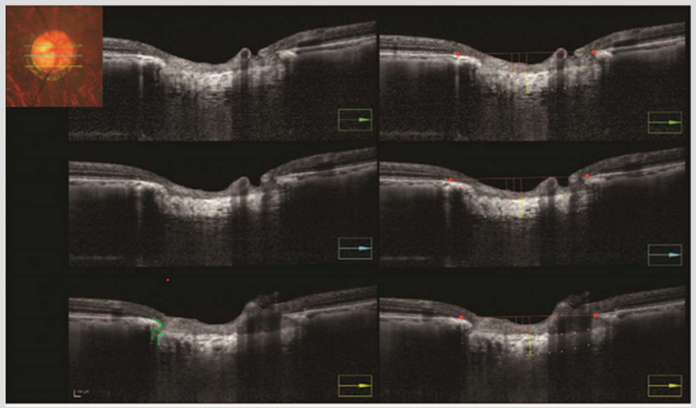
Formulating Nutrients for Preventing Congenital Anomalies

In the context of obstruction to the flow of Cerebrospinal Fluid which may be due to hindrance in flow as one specific point or due to malformation such as primary hydrocephalus and secondary hydrocephalus which is due to bleeding or haemorrhage within the brain or any growth or mass. Several other authors have classified hydrocephalus into communicating hydrocephalus, which has been explained as due to inefficient absorption of CSF via the arachnoid granulations into the superior sagittal sinus and non-communicating or obstructive which results from any impedance in the flow. Non-communicating hydrocephalus has been further sub-grouped into an acquired type of hydrocephalus and congenital type. These malformations can be prevented by formulating nutrients for women in reproductive age. Congenital hydrocephalus which develops during infancy period, exhibits at birth and usually has no known causative factor associated with it. Identifying and formulating a formula of combination of nutrients to prevent and reduce birth defects may result in its reduction.



A Diagnostic Criterion for Glaucoma





Deepening and thinning of lamina cribrosa (LC) are risk factors for faster progression of global retinal nerve fiber layer (RNFL) thinning, as reported previously deeper and thinner LC is associated more with superior RNFL thinning. Focal LC defects significantly were linked with inferior RNFL thinning. 12 m deepening is associated with 0.7% increased rate of superior RNFL thinning, whereas 12 m thickening of LC is associated with 0.6% decrease in rate of superior RNFL thinning. Eyes with focal LC defects have more changes of global and localized VF progression and inferior region is more susceptible. Generalized LC defects of deep LCD and thin LCT have more predilection with the superior region, and influenced by age and untreated IOP levels. Normal IOP glaucoma is associated more with focal LC defects. High IOP is related more with generalized LC defects and superior RNFL aberrations. We aim to formulate a preventive diagnostic criterion for an eye disease known as glaucoma so as to prevent timely blindness.

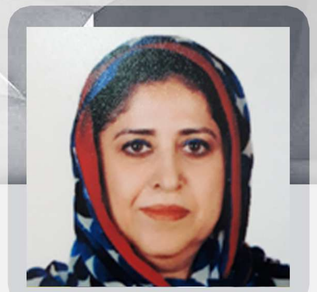
KEY RESEARCHERS

Prof Dr. Ambreen Usmani

Dr. Ambreen Usmani MBBS, MPhil-Anatomy,MCPS-HPE, PGD-Bioethics, PhD-Anatomy is a Senior Professor & Head of Anatomy Department; Vice Principal, Deputy Director-Medical Education at Bahria University Medical and Dental College Karachi. She is also an honorary faculty of MCPS-HPE program at the College of Physicians and Surgeons. Prof Usmani has over 60 international and national publications and conference papers in the subject of anatomy and medical education. Her latest work was presented in Royal College of Gynae and Obst, London, UK. She holds especial interest in discovering anti-cancer treatment at molecular level. Presently she is supervising 15 postgraduate students of MPhil and MCPS. She is working on projects which can help in treatment of patients in rural and unreachable areas where basic medical facilities are not available but it can be made possible by e-medicine and development of applications which can be handy and easily usable. Dr Usmani has facilitated over 50 workshops on educational planning & evaluation, assessment of competence, supervisory skills, mentoring medical student, effective process of PBL, PBL writing and writing research proposals at various venues.

Prof Dr. Aisha Qamar

Prof. Dr. Aisha Qamar MBBS, MPhil-Anatomy is a professor in the department of Anatomy, BUMDC. She is a graduate and gold medallist from the Army Medical College, and has done her MPhil in Anatomy from Basic Medical Sciences Institute (BMSI), Jinnah Postgraduate Medical Centre. In addition to undergraduate teaching, she has keen interest in research and post graduate teaching. She has 19 international and national publications to her credit. She is a postgraduate supervisor and has supervised researches of 5 MPhil students till to date. Prof Qamar also served as editor of Journal of Bahria University Medical and Dental College (JBUMDC). She has also actively participated in College of Physicians and Surgeons MCQ re-treat revising MCQs of Anatomy for Fellowship examination.



Dr. Yasmeen Salman

Dr. Yasmeen Salman MBBS, MPhil-Anatomy is an Associate Professor in the Department of Anatomy Bahria University Medical and Dental College. She completed her postgraduate degree from Basic Medical Sciences Institute (BMSI), Jinnah Postgraduate Medical Center and has several national and international publications to her credit. She has co-supervised MPhil students and takes keen interest identifying effects of nutrients in diabetes mellitus and other endocrinology diseases. Dr Salman has studied the effects of drugs in endocrine related disorders as clinical phase zero and continues to identify reasons of such harmful and disabling diseases.