“A Shadow Apart”: A Symposium on Biomedical Imaging

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The world would not have progressed, if people had lived and worked in isolation. Human beings have always gained by sharing knowledge. Science has been no exception. The Khwarzimic Science Society was established in this spirit of sharing. To exemplify this and to show that different phenomena belonging to apparently disparate realms are governed by the same principles, an effort was made by the society to bring the physicists and physicians together in a symposium on Biomedical Imaging. Today, different imaging modalities such as X-ravs. Ultrasonography, CAT scans and MRI are used by both physicians and surgeons to arrive at diagnoses and determine the extent of the disease. It is imperative for physicians to understand the principles that govern the working of these different modalities. To this and other ends illuminated above the symposium on Biomedical Imaging was conducted in Allama Iqbal Medical College, Lahore, by the efforts of Khwarzimic Science Society. Entitled as “A Shadow Apart!” It was a joint venture by the medical students from the Aga Khan University, Karachi and the engineering students from The University of Engineering and Technology, Lahore, all being members of KSS. Talking to the audience, the President of the Khwarzimic Science Society, Prof. Dr. Saadat Anwar Siddiqi highlighted the objectives of the symposium while Principal Allama Iqbal Medical College, Prof. Dr. Eice Muhammad who was presiding over the session also expressed his views and appreciated the event.

The symposium was divided into various sections; each dedicated to discussion of Roentgenography, Ultrasonography, 3D Image reconstruction and Magnetic Resonance Imaging.

Roentgenography

The discoveiy, technical evolution and medical applicability of X-rays was discussed by a medical student. Stress was laid on the importance of plain radiography, mammography, angiography, fluoroscopy and the use of X-rays in radiotherapy. A detailed discussion on contrast studies, various kinds of contrasts and the complications of their use was carried out. Harmful effects of X-mys and safety guidelines in this context were elaborated. An engineering student then focussed on the basic principles governing the generation of X-rays, their interaction with matter, their reception and image formation on the film. A number of x-ray images were then shown.

Ultrasonography

A medical student after giving a brief overview and history ofUltrasonographydiscussed the medical uses of this modality at length. An engineering student then discussed the operational modes: A, B, compound, B, M and Doppler mode, the piezolectric effect and the resolution of ultrasound images at length. Examples of ultrasound images correlated with medical scenarios were later presented by a medical student.

3D Image Reconstruction

An engineering student talked in length about algebraic reconstmction technique (a computer technique used for image reconstruction) and other projection methods such as Fourier Transform Methods and Filter Back Projection Methods in the section on three dimensional image reconstruction.

Mifi

The development of MIRJ as a diagnostic modality was discussed by a medical student. Its indications, advantages and disadvantages (in comparison with CT Scans) were elaborated. A discussion on the principles governing MRI, concepts of proton spin, gyroscopic motion, precession velocity, phenomenon of resonance, T1, T2 images, was followed by an engineering student and case examples of MRI were then presented.

Neither physicists nor physicians work in a social vacuum in their quest for knowledge. The work of

one endorses that of the other. It was hence heartening to see physicians and physicists come together in this symposium on biomedical imaging. This symposium exemplified the fact that advances in biomedical imaging would have been impossible without both the physicists, who developed the basic mechanical principles into indispensable diagnostic modalities and the physicians who put to use this equipment invented for the service of humaniiy.

Presenters: The Aga Khan University, Karachi:

Rushdia Zareen Yusuf and Faisal Habib Cheema.

The University of Engineering and Technology, Lahore:

Nacema Halim, Muhammad AbuBakar, Muhammad Umar Khan, Ahmed Bilal Ashraf and Muhammad Sabieh Anwar

Editor ‘s Note

The Khwarzimic Science Society (http://w khwarzimic.org) aims to keep students ofscience apace with the most recent advances in science and technology. It strives to bring forth the inter-disciplinary nature of science, through the variety and diversity of its programmes. The above mentioned .symposium is probably a first of its kind of collaboration, between different fields of -science, arranged at a student level. Such a commendable initiative should be encouraged and emulated by the students ofall the universities.