Teaching Strategies in Pathology

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Pathology is the soul and mind of the medicine. It encompasses and binds all cells, tissues and systems of the body. Without sound understanding of pathology, no one can be a good physician regardless of the type of specialty. It therefore becomes immensely important to adopt right teaching strategies for pathology education from the very beginning. To teach pathology as a casual, disinterested, cumbersome, dull “basic science” subject is perhaps the worst form of schooling of a subject that is the most thrilling and the most fascinating.

Mountainous amount of useless, impractical and to some extent commercially driven knowledge makes pathology very exhaustive, self-defeating and boring. How can one remember and perform so many CD markers on almost every neoplasm? It may be “reasonable” and affordable in countries like USA where payment is usually made through Blue Cross and Blue Shield or Social Security. However, countries like Pakistan where IMF and World Banks etc. have made it difficult for common man to earn bread and butter, let alone to have luxury of all sorts of markers on tissues just to satisfy lust of some “Lymphomaniacs”! One wonders how many mediators, factors, lymphokines and markers one needs to remember by heart to practice sensible medicine. Too much trivia is certainly not a wise way to learn and impart knowledge. Here I must quote one famous prayer of the most learned person of all mankind and of all time i.e. Prophet Muhammad (PBUH) in which he sought God’s protection from useless knowledge. The useless knowledge can break the backbone and with breaking of this backbone of medicine i.e. pathology, entire medicine is paralysed. Jigr Muradabadi had described such futile knowledge as “Jahl-e-Khirad” (Stupidity of Wisdom) in an era where man has shrunken while the shadows have enlarged!

The teaching of pathology must be fully integrated with other subjects bridging both so-called basic and clinical subjects. It is like oxygen that must reach each cell. In fact some part of pathology education should begin in pre-medical years. Instead of teaching botany in detail in pre-medical years, it would be much better to teach, pathological microorganisms with their morphology and classifications, some cellular abnormalities, common metabolic pathways and a few genetic and endocrine disorders. We can also teach histology of some common cells at this stage. It is indeed heartening to see that schools have introduced basic genetics at early levels. Most students find it very interesting. Accordingly, laboratory science practicals may include preparing karyotypes, doing gram and acid fast stains, identifying effects of some basic nutritional diseases e.g. anemia (peripheral smears), fatty change (liver biopsy) and recognizing basic cell injury pattern in electron micrographs. A few schools are already doing this to some extent. This however needs expansion.

In medical colleges, the teaching of pathology must begin side-by-side with anatomy, histology and radiology right from the first year. Instead of just teaching humerus and femur bones in anatomy it would be better to show the radiographs of these bones along with common fractures and neoplasia and their histological appearances! Of course, we should first point to the normal osteoblasts, osteocytes, chondroblasts, chondrocytes, fibroblasts, hemorrhage and calcification etc. We may introduce healing and repair with modifying systemic and local factors at this
stage. A pathologist should teach cytology, histology and pathology along with radiologist and orthopedic surgeon. This will also light up the “boring” anatomy and histology.

It would be preferable that neurosurgeon, neuropathologist and pathologist respectively teach anatomy of skull, physiology of brain and histology of brain. The pathologist can then highlight some basic inflammatory, infectious and neoplastic disorders. Of course, these concepts would require strengthening and reinforcing gradually throughout subsequent years of medical school. This will eliminate the “dumb” phenomenon seen in many medical schools where students in third year hear the names of staphylococcus etc for the first time and have no idea of neoplasia etc.

Although pathology is very vast subject particularly if we include all its sub disciplines, however luckily there are set patterns of injuries and reactions. Once these are learned, life becomes easy. The reaction to hemorrhage is same whether we observe it in adenomatous goitre, brown tumor of parathyroid hyperplasia (Osteitis Fibrosa Cystica), pigmented villonodular tenosynovitis, xanthomatous cystitis, glioblastoma multiforme or aneurysmal bone cyst etc. We are presenting in this issue of the International Journal of Pathology (IJP) an article titled “In Situ Hemorrhage” highlighting the common reactions produced by hemorrhages and how they can confuse pathologists unless basics are learnt properly. Once the cellular neoplastic features are well recognized at cytology, it becomes easier to diagnose malignancy. Therefore, it is important to impart these commonalities to the students in depth before embarking on teaching different systems; a task carried out by most pathology textbooks but not to the extent that is desired. Unfortunately on contrary, most textbooks of Pathology indulge in too much trivia and un-established scientific “facts”.

The integrated teaching of pathology from very beginning of medical college will Insha Allah (God Willing) provide better and more caring students in the senior years. This will be good not only for patients and consultants but also for students themselves as what we do not know we do not see. Better-educated and preconditioned students will be in good shape to understand the disease processes and phenomenon in the outpatient departments and in the wards. Armed with solid pathology background some may even wish for research projects with consultants. The colleges may offer talented and willing students an option for doing an extra year of research in pathology that may account for additional PhD degree as is happening at several institutions in USA. The medical schools should have animal houses to facilitate basic pathological phenomenon and some fundamental research.

In this issue of IJP we have included a short article on animal model of postsplenectomy septicemia. Fortunately many diseases in animals pursue the same course and display the same microscopic features as seen in human beings. Animal models may not only be used for studying various disease processes and their management but can also be used to perfect surgical procedures.

With internet and telemedicine, teaching pathology becomes even more fun. Now many journals are available on internet and students should learn early to how to get benefit from them. They must develop critical and analysing mind to not to accept every word published in the journals or books as divine decree. They must realize that even the best journals at times may contain a lot of useless articles. Even “good” articles may have subliminal commercial connotations and overtones.

Instead of delivering lectures, it would be better to impart the knowledge in more interactive tutorial manner. With proper history, signs and symptoms, students should be shown surgical pathology gross specimens, cytology smears histopathology sections, microbial plates, peripheral films and radiology images etc. Requesting tests in proper order considering the cost, pain and botheration must be clearly taught. Doing expensive CT Scan without doing proper sputum cytology is a poor medicine. Similarly not performing proper urine cytology before cystoscopy etc. defies all logics. This issue of IJP contains a valuable article on problem-based learning. The final divine book i.e. Quran had problem oriented approach from the very beginning. As the problem arose specific answers were provided. If the entire Qur’an were to be revealed on day one without problem-oriented approach very few people would have appreciated its immense beauty, wisdom and applications. We would have not then witnessed the great human progress due to its great influence and guidance.

Examinations and evaluations are integral part of teaching. The healthy fear of examination and evaluation should create motivation and lead to progress of students. The examinations should
have minimal element of “luck” factor. These should be very thorough so that no one should pass without acquiring the basic essential knowledge, skills and training. Traditional viva and selective specimen displays should better be dispensed off. Instead, modern multiple-choice questions based examinations on computer screens should provide fair evaluations that will translate in producing better doctors.

As medicine is the noblest of all the professions and pathology is its soul, it must inculcate sound ethical and moral values. The future doctors and future pathologists must be aware of the prices of the tests. Unnecessary tests and tests of dubious nature must not be requested and preformed. The students should have clear understanding of what is “normal” and what is “abnormal.” They must unambiguously understand reference ranges, significance, sensitivity, specificity, standard deviations and other statistical terms. Kickbacks, commissions, wrong interpretations, bad habits of not paying attention, not managing time and energy etc. etc. need to be eliminated. Sticking to the utmost ethical values in routine work, observations and research must be deeply embedded. Without proper ethical and moral values an educated person would become the worst beast.

The Western countries are suffering from many ethical and moral dilemmas. Too much litigation against doctors had led to “defensive” medicine that in turn becomes very expensive. Apart from buying heavy insurance premiums, too many unnecessary tests and procedures are ordered to save one’s skin. The patient has to ultimately pay for each test and for the expensive insurance premium of the doctors and hospitals. On the other hand, countries like Pakistan where judicial system lacks accountability, the Government and private hospitals are plagued with all kinds of unethical and malpractices. There are clear-cut conflicts of interests. Usual solutions provided and sometimes forcefully implemented are no less than the problems themselves. If we have to improve the society, medicine and pathology, due importance had to be given to our souls and minds as well. Simple materialistic growth and achievements mean very little. As Iqbal predicted and as pointed out by Anne Marrie Shimel that such spiritless and unethical materialist growth would be a killer.

We, the teachers of pathology had to be the role models and should lift pathology in its entirety. There is a dire need of separate College of Pathologists in countries like Pakistan that should focus on all these issues. Quality assurance in teaching, quality in evaluations & examinations, ethical practices, safeguarding genuine rights and interests of patients, students, residents, pathologists and performance improvement etc. must be the genuine concern of separate College of Pathologists. On the other hand, examinations should come under domain of separate boards comprised of honest, experienced teaching pathologists with not only long experience but with zeal and eagerness to adopt new and modern methods of evaluation.

In summary, pathology inclusive of Surgical Pathology, Cytology, Hematology, Microbiology, Chemistry and Blood Transfusion should be introduced at early stage in medical college in a very integrated, multidisciplinary problem oriented setting. The pathology education then should be reinforced in all subsequent years. Obsolete practicals and viva examinations should be replaced with computer assisted and stored images along with multiple-choice questions. There should be elimination of unethical, commercially derived and excessive litigation feared teaching and tests. Human and humane values should be an integral part of pathology teaching and training. Separate Colleges of Pathology are needed to closely monitor quality in all spheres of teaching and practice of pathology. Separate Boards above all sorts of politics and elections are required for fair and objective assessments of the trainees. In this case we may learn from valuable USA experiences and systems.