The reasons why I became a pathologist
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Why I Chose Pathology?
I decided to pursue a pathology career after working in primary care for about 12 months. I greatly admire my colleagues in primary care as they are the first line against illness and injury. But seeing about 50 patients a day and faced with an increased burden of paperwork and uncompliant patients, my job satisfaction had plummeted. I did not feel I incorporated a lot of science into my daily work.

During medical school I did quite well in pathology (I did fine in clinical courses too). I was introduced to pathology during the third year of our 6-year-medical program. In these days pathology was taught very well. Dr. Bitri, our pathology chair, was very inspiring. He stressed how pathology is an indispensable bridge between the basic sciences and clinical specialties, a discipline that provides firm scientific foundation for all medical practice. As Dr. Bitri put it, “clinicians give differential diagnoses based on the symptoms, signs, laboratory findings and radiological abnormalities; pathologists tell them what it is”.

Perception of Pathology as a Discipline in Medical School
Medical students know that pathology is a cornerstone discipline in Medical Schools. As one of my students, Leila Ghaffari, used to say, “What some students don’t understand is that the Board Exam is simply one giant pathology exam. It is a subject that encompasses all medical sciences: anatomy, histology, physiology, genetics, biochemistry, epidemiology and clinical medicine”.

Besides feeling that pathology is intellectually challenging, students quickly realize that pathology is the only discipline that allows students to visualize disease processes by themselves. Student’s fascination with pathology is ignited when they first sit behind a microscope and see the cellular world of a body organ. Magdalena Bax describes her shock and astonishment as following: “As I peered through the microscope, I was enthralled at how the H&E staining gave the tissue such colorful life, like the most beautiful stained glass window at Grossmünster cathedral; seeing the goblet cells sandwiched between columnar cells and putting function and structure together. It was that pivotal moment in my education that set the scene for my love of pathology”.

Misconceptions of Pathology
Many people, including medical students believe that pathologists have no contact with living patients. They have misconceptions that pathologists are chained to their microscopes or just perform autopsies. This may be partly explained by medical comedies, such as “Scrubs”, that portray pathologists as nerds who have failed as clinicians or are afraid of patients and hide behind their desks and microscopes. Dr. Doug Murphy portrays such a character in “Scrubs” that after being an incompetent clinician, is ultimately transferred from internal medicine to pathology. The reality is that medical students get little exposure to pathology as a career. When they have good pathology experiences during Medical School, pathology becomes especially fascinating and pathologists become good role models. One of main reasons why I became a pathologist is that I had exceptionally good pathology teachers. However, a minority of students graduating from our Medical School have chosen pathology as a specialty. Of the students
interested in a career in pathology, many perceive the discipline as more scientifically rigorous, with pathologists as the most knowledgeable in the medical profession. On the other hand, limited patient contact is the most common response of those that show little interest in pursuing pathology as a career.

**My Residency Experience**
During the residency years I first went over histology; after that I learned how to diagnose diseases by examining surgically procured specimens, such as biopsies, resections, and excisions; then assisted my colleagues performing autopsies and learned how to write a pathology report. Attending clinical pathological conferences was another very important activity. My colleagues used to show slides to each other if the case was difficult or unusual. Twice weekly “difficult case” conferences were used for this purpose.

**AUTOPSIES**
In my later years when I became a faculty member and taught pathology to medical students, the extensive autopsy experience I had served me very well. In the 1970s, most of patients who died in our University Hospital were being autopsied. I can honestly say that I have carried out about 1,500 autopsies during my professional years. It was customary for our physicians to attend the autopsies of their own patients. The autopsy room was a place where students and physicians came to learn from their mistakes so that they are not repeated. In a sense, “the dead are teaching the living1”.

Today the percentage of patients who die in hospitals and are autopsied is alarmingly low^2. Most of our medical students are learning about diseases and their manifestations from digital images used in PowerPoint slides or pictures out of printed textbook pages. The only place they can observe gross pathology changes in body organs is cadaver dissections in the Anatomy Lab.

As Ji-Suk Moon, one of my students, used to say “You can read about and see images of a disease in attempt to fully understand pathology but you will never succeed. Without a cadaver lab, you will never be blessed with the full knowledge. I can confidently say this: pathology is complex and exciting. One of my classmates had a cadaver person with a large brain cystic change due to an old ischemic infarct. With the increasing obesity in America with complex co-morbidities, stroke events are more common among the population compared to previous generations. What was so fascinating about the pathology of this particular cadaver person is that though a significant amount of brain tissue was lost, we were told that she was able to live for quite a few years afterwards. The cyst within the brain and the large void of space in the cranium challenged my previous experiences regarding the effects of ischemic stroke and life expectancy post attack. The challenge of pathology makes medicine both exciting and alive for me. Being able to put my hands on a shrunken red-brown cirrhotic liver and feel its rock-hard consistency with nodular irregularity or feeling the piece of dura mater is exciting. The tactile confirmation of disease process makes pathology alive. Some may think pathology is just information that medical school needs to teach and once a medical student advances in his or her career, it is no longer important. I disagree with that presumption. Pathology is complex and changing. Pathology expands our minds and peak our interest in medicine no matter what field we choose to enter. It is complex because like any discovery, we have yet to fully understand every disease. I equate pathology to space exploration”. 
CLINICAL PATHOLOGIC CONFERENCES
It was customary for the Pathology department to held clinical pathologic conferences (CPC) for each of the autopsied patients of the University Hospital. During my residency years and later, CPCs were the best tool for interdisciplinary exchange of knowledge among the faculty members and physicians of different specialties.

The CPCs were usually held in the small auditorium of the Pathology Department utilizing the classic format. The case was presented by the treating physician who described the patient’s chief complaint, vital signs, physical examination, history of present illness and past medical history. Laboratory test results, radiographic, electrocardiographic and echocardiographic findings were presented in the order in which they were collected. Then the differential diagnosis was discussed and the final clinical diagnosis was offered to the audience. After that, the pathologist presented the gross and microscopic findings from the autopsy examination and stated the pathological diagnosis. Questions were asked regarding particular clinical, laboratory, imaging or pathologic findings. A general discussion on the discrepancies between the clinical and pathological diagnosis concluded the conference.

CPCs were considered to be important and most physicians felt a strong desire to attend as often as possible. Make no mistake, this is an extensive problem-solving approach and may be the best format of case-based learning in medicine. By attending CPCs, I was introduced very early to the process of deductive reasoning used to rule out potential diagnoses and to analyze clinical mistakes such as why a pulmonary embolism was missed or a pseudomembranous colitis was unsuspected.

HAVING A GOOD EYE IS NECESSARY TO BECOME A GOOD PATHOLOGIST
I discovered that pathology is a very visual science. A good pathologist must have observational skills, attention to detail and a talent for pattern recognition. What we see on a microscope slide are not just colored structures but patterns. For example, dysfunctional uterine bleeding is diagnosed based on a combination of the type of endometrial glands (proliferative or secretory), the number of glands in total endometrial area, their regular (even) or irregular (uneven) distribution within the endometrium and their relative size. Dr. Bitri used to quote Goethe's phrase: “One sees only what one knows”3, which means that you are able to recognize only a pattern you are familiar with. As pathology is a visual specialty, people born with visual aptitude are well suited for it. It is surprising to see how many good pathologists like design and visual arts.

Within a year of residency I discovered I loved pathology. The discipline struck me as very cerebral; I had to have a vast knowledge of virtually every disease process in each and every one of the organ systems. Finding all the answers in the colorful histopathologic slides was pure science to me: I felt the insatiable desire to uncover its secrets, penetrate the unknown. I used to give straightforward answers to important questions: is this lesion cancer? I did not have to worry about noncompliant patients.

I became fully aware that pathology is the foundation of medical diagnosis and treatment, and that excited me. In most cases, I was the only one diagnosing medical situations and guiding surgeons and oncologists in their clinical decision making process, helping them treat patients correctly and efficiently. According to College of American Pathologists4, the daily medical
decisions made by pathologists and the laboratories they direct drive an estimated 70% of clinical decision making.

*The Changing Landscape of Pathology*

The only frustration I experienced was that I was invisible most of the time to patients and clinician colleagues: my critical work was behind the scenes. It may seem natural that pathologists are focused on the slides, while clinicians concentrate on obtaining a pertinent history, performing a detailed physical exam, and interpreting clinical laboratory tests. Patients don’t typically see what pathologists do. They are told their specimen will be sent to the pathology lab and a report will be issued in a few days. Similarly, pathologists have little opportunity to directly contact patients. Clinicians send their surgical specimens accompanied by a requisition form where all pertinent clinical information to reach the diagnosis is included and so pathologists do not need to discuss anything with patients. But we effectively speak to patients through our reports, via clinicians. And by doing this we are directly involved in most of professional diagnostic and treatment decisions that affect a patient’s life. For example, by identifying the type of cancer and determining the extent of cancer spreading, pathologists make critical decisions that directly influence treatment protocols for our patients.

The fascination with patient interaction pushed the College of American Pathologists, the leading organization of pathologists in the United States to launch in 2008 a historic and unprecedented campaign to transform the specialty of pathology. According to the College of American Pathologists, pathologists are at a crossroad. Transformation refers to pathologists pursuing new roles in the workplace. They need to abandon the old stereotype that depicts them as hidden from their patients in reclusive backroom and demonstrate a greater recognition as a physician and a critical member of the patient care team. Pathologists can and must provide details beyond what is printed on the pathology report and offer guidance regarding the test and treatment process. Their value is beyond diagnosis and should also center on influencing prevention, prognosis and treatment. Only one direction will lead to success: pathologists must reestablish themselves as the “doctor’s doctor,” go see patients, talk to attending physicians, and review charts.

They need to share their in-depth knowledge and understanding of the pathophysiology of disease with colleagues and patients. All this requires a profound knowledge of clinical medicine as well as anatomic and clinical pathology. This means that it is time for pathologists to move from defensive or passive pathology to active, clinically-oriented pathology. The phrase—“active clinically oriented pathology”—captures the essence of patient-centered pathology and laboratory medicine. The defensive or passive pathology could have been one of the reasons why, in recent years, fewer and fewer medical doctors have embraced a career in pathology, fearing that a lack of personal contact with a patient would not be fulfilling the true nature of the medical practice.

*References*


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