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Pathology's Other Sense

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Pathology is classically considered one of the visual specialties of medicine. The pathologist, with his or her microscope, scans the dispassionate tissue, performing the cognitive and often clever work of translating the appearance of thousands of cells into an individual diagnosis. The autopsy, one of pathology's most well-known procedures, literally means "to see for one's self." Even during training, our venerable professors emphasize that the microscope may be an acquired form of blindness and that the proper diagnosis can often be made by examining the patient's tissue with the naked eye alone. My fellow trainees and I are often struck by the beauty of the slides we examine. Stained with the traditional hematoxylin and eosin dyes, the patient's cells marinate in shades of purple and pink. Advanced staining techniques impart even more useful and transfixing colors to the cells. Lungs are often bathed in the "pentachrome" stain, so named for the five brilliant hues that result.

It must be said that this engrossing visual world is a somewhat superficial view of our specialty. The pathologist does not just examine human tissue sliced into five micrometer sections. We are also called to examine entire organs, from a three centimeter appendix to a bowel many feet in length. This experience involves visual and tactile inspection, but infrequently mentioned is the element of smell. We do occasionally discuss the smells of pathology, but the tone is decidedly different. The smell of a necrotic tumor—whose rapid growth has led it to asphyxiate itself —is not spoken about with the same rapture as that very tumor viewed laid out on a glass slide.

The powerful chemicals we use in our laboratory are accompanied by powerful smells. These caustic compounds in proper concentrations elicit reflexive physical responses—runny noses, burning eyes, scratchy throats. As we build better microscopes to bring us visually closer to our work, so too we build better exhaust systems to drive the smells farther away. While most pathologists are thankful for this technology, I wonder what might be lost in this eagerness to extricate an entire sense from our work.

Isolated in our labs, many of these chemical smells are other-worldly. There are only a few professions that allow one to become acquainted with formaldehyde vapor. Other smells could be described as inner-worldly. They are our own biology, but typically sequestered in our bodies—the iron-laden smell of blood, the oddly sweet smell of yellow, greasy fat. These invocations can make this job unexpectedly intimate. We may speak about the unpleasant odor of emptying a freshly-resected colon of feces so we can examine the tumor, but we can't deny its familiarity. This smell reminds us of an agonizing weekend recovering from a gas station egg salad sandwich, or of changing our beautiful new niece's diaper for the first time.

My conversations with patients and their families these days have an odd anosmia. When I counsel them, it's usually by phone as they grieve a loved one's passing and consider next steps. This mode feels odd; as much as I remember the emotions and conversations of my time on the inpatient wards as a medical student, I equally remember the smells. A colon may smell unpleasant, but there is no pity involved—a colon can't help but smell like a colon. That same smell, however, can often permeate a hospital floor when a patient is in the abject position of no longer being able to control his bodily functions or attend to the necessary hygiene that follows. I remember the bed-ridden patients who couldn't bathe themselves in the usual manner and relied on kind and over-worked nurses to impart some minimum cleanliness. The stench reinforces what we already knew—illness is not glamorous. The job of the healer is holy in how close it comes to

the afterlife. Once or twice I met a patient who smelled like the necrotic tumors I now know well because for some reason, be it denial or poverty, they allowed their own tumor to grow and fungate to a horrifying extent, bringing this death literally to the surface.

To my friends and family, my work with human bodies and tissue proves my comfort with disease, but when I recall these scents in the context of patients I knew and cared for, I am reminded of the T.S. Eliot line—"In short, I was afraid." The visceral punch of these odors makes me think there could be an element of cowardice in what I do. Perhaps I didn't have the necessary constitution to watch patients suffer from cancer before my eyes—and nose—and resigned myself to helping with a distant diagnosis.

Other days, the pleasant smells remind me of the joy and meaning I receive from my work. The aroma of a freshly processed slide, with its still wet glue under the cover slip, represents another mystery to be solved, another fate to be predicted. A coat of bleach when the techs clean up after an autopsy punctuates a sense of progress in my training. Answers from an autopsy can also cleanse some small part of the suffering that accompanies death. Even the burn of formaldehyde can take on an optimistic air—removing a tissue that spent a night soaking in formalin solution confirms that the cells have been fixed in place, the clock of decay artificially paused so I can spend the necessary time examining and considering the cancer's features and accumulating all the information the patient needs for treatment. Formalin-fixed tissue is like experiencing your own work hanging in a museum—cut off from its natural context and instead examined by myriad critical eyes. The patient at that moment is vulnerable but also honored through single-minded attention.

Marcel Proust was hardly the only person to note the uniquely evocative coupling that smell has to memory. In medical school, we are reminded that olfaction is the only sense whose neural connections communicate directly with the memory centers of our brain. In the course of a day, my specialty's smells take me close to death yet back to childhood. At times, the deafening exhaust systems and blinding light of the microscope isolate me from our human task, but when the molecules creep into my olfactory neurons, this job's intimacy with human bodies—and human beings—could never feel closer.

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