

Who will perform my autopsy?

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"My friend was ill, I cared for him; he died, I dissected him."

Ascribed to various French physicians

When I was a resident pathologist at The Mount Sinai Hospital, New York, from 1965 to 1969, we were taught that it was a privilege to perform an autopsy on another physician and particularly on another pathologist. I learned this particularly from Max Robinowitz, my chief resident, with whom I performed my first adult autopsy; a 71 year old physician with thymoma-associated myasthenia gravis whose proximate cause of death was bronchopneumonia.

In 1968, I was chief resident and reviewing a tray of surgical specimen slides with my teacher, the legendary surgical pathologist Sadao Otani. He rolled up his sleeve to have me feel a firm, movable, subcutaneous nodule in his forearm which he diagnosed as a "calcifying epithelioma of Malherbe" (pilomatrixoma). "When you do my autopsy," he requested, "don't forget this." Four months later he died of severe pulmonary emphysema with heart failure and I carried out the autopsy and confirmed his diagnosis.

Over the years I have performed or overseen autopsies on other physicians including, in recent years, two internationally renowned pathologists who were close friends and who died at my hospital. In both cases, despite their both having outstanding physicians and the most sophisticated of evaluations, the principal diagnosis and cause of death were not

recognized. Other findings also proved important for surviving family members.

It was my practice, for more than twenty-five years, to be the principal attending on the autopsy service each July, performing the first autopsy ("skin to skin") with each new resident. I taught the classic Rokitansky-Letulle "medical autopsy" method developed at the University of Vienna and promoted at Mount Sinai by Paul Klemperer, one of the greatest pathologists of the first half of the 20th century and by his successor, Hans Popper, both of whom had studied at the University of Vienna. Over the years it was also my practice to review with the performing resident most of the autopsies performed at the institutions to which I belonged, after they had been reviewed by the assigned staff pathologist. Once, residents presented me with a t-shirt with the name "Sherlock" on it because I found so many things the reviewing pathologist had missed.

It is with this background that I survey the current status of the autopsy.

Autopsy has served many purposes, not the least of which is to help novice pathologists learn how to examine and interpret macroscopic pathology. An informal phone survey of senior pathologists at 25 teaching centers in all parts of the country confirms that "gross pathology" and autopsy performance are both, with no pun intended, dying arts. Staff pathologists who supervise autopsies in teaching programs only rarely claim autopsy to be their primary

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interest. This deficit of interest by faculty members, coupled with the paucity of autopsies performed, makes it almost impossible for a young pathologist to become proficient in autopsy technique and, most importantly, autopsy interpretation. In many centers the autopsy service is overseen by a relatively young pathologist whose teachers themselves had only limited experience. Too often I hear that these well-meaning individuals do not actively participate in the performance of the autopsy and do nothing to promote its use. In some teaching institutions the autopsy service is overseen by forensic pathologists who have considerable practical experience but do not perform the traditional "medical" autopsy. Even where faculty supports the medical autopsy, the number of residents available to perform an autopsy is limited. At one time it was not unusual to perform as many as four or five autopsies in a day. Now any increase in autopsy numbers is often a logistical and physical burden in most departments. The University of São Paulo is unusual in the number of autopsies performed there, under the able leadership of the pathology department chairman, Venancio Alves. Regrettably that high level of continuous learning does not obtain at the overwhelming majority of institutions throughout the world.

Residents learn that, outside of the forensic setting, autopsies are not that important. Pathology Chairs have not earned their academic renown, and faculty members have not earned promotions, by demonstrating interest and skills in autopsy. The Pathology Chair may not attend autopsy conferences at all. Most pathology faculty members try to avoid autopsies. Generally no one speaks for the autopsy in mortality conferences; only rarely will someone speak out and ask, "Was an autopsy performed?" In some programs the rare night-time autopsy, often an "immediate" autopsy for clinical research, earns extra pay for residents who, in the daytime, struggle to accumulate the minimum fifty cases required for certification by the American Board of Pathology.

Reviewing cases already overseen by a staff pathologist (who specifically chose to be on the autopsy service) was often a disheartening experience. As only a few examples: coronary arteries were not always studied if the case was not "cardiac," pulmonary hilar vessels were not dissected unless pulmonary embolus

was suspected, bronchi were not opened, experienced renal pathologists often failed to expose previously unexamined renal pelvis and calyces. A retrospective "quality assurance" study demonstrated that only in one case, other than those for which I was responsible, was even one parathyroid gland identified even when there was clinically apparent renal insufficiency; no one seems to know that parathyroids are almost impossible to find after fixation. The portal vein was generally not identified or opened, even in cases of cirrhosis. The fact that the Chiari network of the coronary sinus is rarely recognized is troubling, but not as worrisome as the failure of faculty members to notice the early morphologic features of heart failure (e.g. extension of the right ventricle apex down to the level of the left, flattening of the papillary muscles). None of the faculty knew how to expose the inner ear (should this still be a regular practice in children with pneumonia?) or obtain posterior ocular/retinal tissue in cases of advanced diabetes mellitus. Another quality assurance study demonstrated that laboratory test values were not included in the clinical summary in the overwhelming majority of cases.

The teaching center autopsy problems are compounded by the increasing use of pathologists assistants (PAs) in both autopsy and surgical pathology. This practice is mandated by shrinking budgets and was introduced, many years ago, by pathologists to ease their workload. PAs are increasingly responsible for dissection. In surgical pathology, not the subject of this discussion, residents often study cases without ever looking at the gross pathology, relying fully on (often suboptimal) gross descriptions.

In time, most likely decades rather than years, molecular testing of blood may be able to replace invasive procedures for both surgical and autopsy pathology. At some time far in the future, external scanners, similar to those imagined for Dr. McCoy of the starship Enterprise, may be able to diagnose all morphologic and physiologic abnormalities, including precursor lesions, without invasive procedures or radiation. In the meantime, autopsies remain a valuable component of the medical care of the patient who has died. The problem worsens with each year as our population grows older since the diagnostic discrepancy rate is greatest in the elderly.

What can be done? The task is daunting in any individual hospital setting. As the number of autopsies performed has declined there are fewer resources available. Many small hospitals do not provide space for autopsy and, not uncommonly, a funeral home may be the venue for this medical procedure -obviously one more disincentive for a pathologist to perform autopsies. The best answer would seem to be in establishing regional autopsy centers in academic centers, an idea promoted thirty or more years ago. In some areas such centers exist and thrive although some of the models emply more of a forensic than medical autopsy approach. The development of a viable business plan for these entities can be challenging although it is clear that the regional autopsy center can be made profitable. In addition to relieving many hospitals of the responsibility and expense of the autopsy, the regional autopsy center allows for the quality performance of autopsies, maximizing the value in terms of both medical science and medical economics. Young pathologists can learn how to perform the autopsy and can have the opportunity to carry out meaningful scientific studies. The accuracy of

currently almost worthless vital statistics about people who die in the hospital setting could be assured.

In the meantime the situation is quite poor. With fewer and fewer young pathologists familiar with the methods of performing a thorough autopsy and unable to interpret the macroscopic findings I find myself questioning whether or not I should continue to promote autopsy for family members who die or even for the patient population at large. Is it even ethical to recommend a medical procedure when the likelihood is that it will be performed and even reviewed by individuals not optimally equipped for the task? The increasingly effective quality assurance approaches common in surgical pathology are uncommonly, and often ineffectively, applied to autopsy. When an autopsy is performed it is often directed to answering the clinician's question rather than recognizing the there is still considerable and significant discrepancy between the clinical diagnoses and the autopsy diagnoses? Does anyone still understand that the autopsy is an objective scientific study of the dead body?

Who will do my autopsy?

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