

*J. S. Sexton,<sup>1</sup> M.D. and G. R. Hennigar,<sup>2</sup> M.D.*

## Forensic Pathology—The Hidden Specialty: A Survey of Forensic Pathology Training Available to Medical Students and Residents

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For years it has been a curious fact that very few doctors have gone into the subspecialty of forensic pathology. In February 1978, there were 11 087 pathologists and only 354 had taken the forensic boards.<sup>3</sup> It has been estimated by various surveys that less than 200 pathologists practice forensic pathology full time [1].

There have been many reasons given for the scarcity of forensic pathologists. High on the list have been low salary, government employment (very few private practices of forensic pathology), long hours (in some jurisdictions), frequent court appearances, and unpleasant case material (decomposed, mutilated, and severely traumatized bodies).

The purpose of this article is to present information about the amount of formal training in forensic pathology available to medical students and residents in anatomic and clinic pathology programs on an elective or required basis. This survey was done to see if there were any merit to the hypothesis that most doctors do not get enough appropriate exposure to forensic pathology to be able to even consider going into the field as a career or as a part-time medical examiner.

### Method

Questionnaires were made up and sent to pathology department chairmen at the 108 medical schools operating in 1972, and this procedure was repeated in 1977 when there were 111 medical schools in the United States. The first survey elicited a rather poor response ( $n = 53$ ) and was not reported. There were 91 responses to the second survey. The questionnaires asked whether a course was being taught to medical students in forensic pathology, how many hours were taught, who taught the course, and whether the teachers were board-certified in forensic pathology. The questionnaire inquired about availability of forensic training for residents in anatomic and clinical pathology and whether these courses for medical students and residents were elective or required. The schools were also asked to estimate the number of students and residents taught.

In addition, a survey of the forensic pathologists who are members of the National Association of Medical Examiners (NAME) was made. Each was asked if he taught forensic pathology; if so, where; and if not, if he would be willing to teach such material. There were 95 responses.

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<sup>1</sup> Assistant professor of pathology, Medical University of South Carolina, Charleston, and chief medical examiner of Charleston County, S. C.

<sup>2</sup> Professor and chairman, Department of Pathology, Medical University of South Carolina, Charleston.

<sup>3</sup> American Board of Pathology, Tampa, Fla., personal communication, 20 Jan. 1978.

## Results

### *Medical Student Teaching*

In evaluating the questionnaire responses, we took into account that, regardless of the time taken to word a questionnaire clearly, some questions are misunderstood. To prevent bias in favor of the hypothesis, the answers were carefully weighed, and when there were conflicting responses the answer that did not favor the hypothesis was used.

One particular area of confusion centered around the definition of forensic pathology. Personal communication with some of the forensic pathologists listed as course instructors revealed that often the course taught was really medical jurisprudence or a combination of medical jurisprudence with very little forensic pathology.

Table 1 shows the results of the survey pertaining to medical student education in forensic pathology. A course in forensic pathology was defined as consisting of more than five lecture hours. Many of the responses included 1 to 4 h in the general pathology course, which can be beneficial but all too often consist of "interesting—but gruesome—cases" that generally "turn people off" rather than "on" to forensic pathology.

### *Residency Training*

Table 2 gives a summary of the responses concerning residency training in forensic pathology. There were a number of conflicts in the responses in this area regarding the number of residents who took elective training in forensic pathology. Often the number of residents was given, but there was no indication that an elective program was offered (question not answered or answered negatively). The number of residents was still counted so the result would be biased against the hypothesis. However, this made the number of programs offering elective training unclear.

### *Medical School Faculty*

Table 3 lists the number of schools that indicated they had at least one forensic pathologist on their faculty. Approximately one third of those answering affirmatively listed more than one forensic pathologist.

TABLE 1—*Curriculum in 91 medical schools.*

Schools with required forensic pathology course	7
Students taught per year	780
Average number of lecture hours	11
Schools with elective forensic pathology course	17
Students taught per year	752
Average number of lecture hours	20
Total number of students taught forensic pathology	1 532
Total number of students matriculated (1976)	13 561

TABLE 2—*Residency training in forensic pathology.*

Residency programs <i>requiring</i> forensic pathology (1 to 3 months)	6
Residents trained in forensic pathology during last 4 years	44
Estimated total residents trained in 4 years (1973 to 1977)	3000
Residents taking elective training in last 4 years	178
Residents taking elective per program (178/85)	2.1
Percentage of schools near medical examiner's system	73

TABLE 3—*Medical schools faculty composition (91 responses).*

Schools with forensic pathologist on faculty	60
Schools where medicolegal autopsies are done by a medical examiner or are supervised by a forensic pathologist	64

A survey of the members of NAME who were forensic pathologists involved in teaching was conducted through the courtesy of the NAME staff during the dues mailing. The results are listed in Table 4.

On reviewing the questionnaires in the two surveys and compiling a list of names, we noted 90 forensic pathologists holding faculty positions and 25 others willing to accept positions for a total of 115 forensic pathologists available to teach medical students and residents in forensic pathology, out of a total of 169 forensic pathologists listed in the 1976-1977 directory of the American Academy of Forensic Sciences [1].

### Discussion

It is clear from the results of this survey that forensic pathology is a hidden specialty. There is little wonder that the population of full-time forensic pathologist represents less than 2% of the pathologists practicing today.

#### *Medical Student Training*

The survey indicates that less than 8% of the responding medical schools teach a required course over 3 h long to medical students and less than 19% of them offer electives. The statistic of approximately 27% of the medical schools teaching any forensic pathology is bad enough; however, it appears even worse when it is noted that the estimated number of students taught totals 1532 out of a yearly total of 15 774 [2] students matriculating. To make the picture even gloomier, further personal discussion with the forensic pathologists who were listed as teaching the few courses in "forensic pathology" revealed that many of the courses are really medical jurisprudence or a combination of the two courses. Table 5 shows the difference in subject matter between the two courses. One is obviously legally oriented, whereas the other is medically oriented.

The pointed question being asked by some readers may be, "Why should we teach forensic pathology to medical students?" One might also consider the need for teaching forensic pathology to law students. Let us consider some of the more important reasons.

From the statistics above, it is clear that many more doctors are needed in the field of forensic pathology to fill positions as chief and deputy chief medical examiners. In addition, thousands of physicians are needed across the country to staff newly forming medical examiners' systems as local medical examiners. These physicians are needed to do the initial investigation on sudden or violent deaths to determine whether an autopsy is needed. If medical students are not exposed to an intellectually stimulating, nongrotesque

 TABLE 4—*Survey of NAME forensic pathologists.*

Teaching in medical school	57 (95 responses)
Teaching forensic pathology	47 (95 responses)
Teaching medical students	39 (95 responses)
Willing to teach if asked	25 (38 responses)
Total number teaching or willing to teach	82 (95 responses)

TABLE 5—*Course outline.*

A. Forensic Pathology	
Signs of death	Toxicology and drug deaths
Identification of dead	Stabbing and cutting deaths
Gunshot wounds	Industrial and traffic deaths
Scene investigation	Crib death, battered child
Asphyxial deaths	Sudden natural deaths
Sexual assault	Blunt trauma and central nervous system trauma
Therapeutic misadventures	Ballistics
Exposure, lightning, and electrical deaths	Drug identification
B. Medical Jurisprudence	
Legal system	Abortion law
Legal doctrine	Euthanasia
Negligence	Consent and authorization
Malpractice	Psychiatry
Physician as witness	Statutory laws of state
Contracts	Wills, estates, and trust
Medical ethics	Partnership

course in forensic pathology, they will not be able to function effectively as medical examiners nor will they be likely to pursue a career in forensic pathology. It is evident from this reasoning that this training will help the growth of much-needed medical examiners' systems, which presently service less than half of our nation's populace [3].

Doctors graduating from our medical schools should know something about diagnostic techniques as they apply to the dead. We normally teach doctors to diagnose in the living, and yet they are frequently called upon by the lay coroner to interpret findings in the dead. Forensic pathology teaches what to do when the routine blood pressure, pulse, temperature, urinalysis, blood count, and personal interview with the patient will not give the answers. Courses in forensic pathology should teach a medical student which external findings should arouse suspicion of violence versus those findings that represent probable artifact as well as how to determine when an autopsy is indicated.

Lawyers should also be exposed to forensic pathology so they will understand the significance of the medical findings beyond the cause of death, which is usually very obvious in a violent death (such as gunshot wound or stabbing). They often deal primarily with histories, and without formal forensic pathology training they may have trouble (whether prosecuting or defending) recognizing the falsehoods (intentional or through confusion) of the witnesses. Since they are the conductors of the symphony in the courtroom they must know all the orchestra members' parts (especially experts such as the forensic pathologist).

Additionally, the teaching of forensic pathology to both doctors and lawyers helps to build a bridge of communication between members of the two professions so that factual matters can be discussed for the benefit of the public. This is especially important at a time when the two professions appear to be drifting apart in the sea of controversy over malpractice.

### *Residency Training*

This discussion should also bring into focus the dismal picture the survey painted regarding forensic pathology training for residents. The 60 positions offered in the 29 teaching programs in forensic pathology are seldom even half filled. However, the 392 pathol-

ogy residency programs filled 2756 of the offered 3180 positions in 1974 [4]. Unfortunately, only approximately 222 residents of an estimated 3000 in programs between 1974 and 1978 received any formal forensic pathology training, according to the questionnaire response. Less than 7% of the schools responded that forensic pathology training was required of residents, accounting for only 44 residents in four years. Sixteen of those were trained at one institution. The elective programs for residents indicated that only 1 out of approximately 14 residents (0.5 resident at each school) take the program in a four-year period for one to three months.<sup>4</sup>

Let us address the question, "Why teach forensic pathology to residents?" There are not enough forensic pathologists to do all the forensic autopsies and there may never be. The violent deaths like traffic accidents, industrial accidents, and suicides that do not go to criminal court can easily be examined by hospital-based pathologists with some forensic pathology training. Without this training, however, they sometimes "get burned" on some technical points and become "gun shy" about doing "legal" cases. Homicides could also be examined, particularly when there is no forensic pathologist available, as an alternative to having no autopsy performed.

In jurisdictions where a lay coroner has to determine if an autopsy is to be done (about 50% on population basis) [3], he soon decides that it is not worth the bother asking for one if the pathologist will not do it. A survey of homicides in South Carolina (2 of 46 counties have a medical examiner system with the rest having elected lay coroners) in 1970 revealed that only 36% were autopsied. The locating of 13 pathologists in our state who have received three months of forensic pathology training at our institution since 1968 probably accounts for the present homicide autopsy rate of 72%.<sup>5</sup>

Some of the same arguments that were put forth concerning medical students apply to residents. They should know all of the necessary details in the handling of a medicolegal death. They need to be exposed to forensic pathology even if they are not interested in pursuing a career in this area of medicine. This training should be done under the direct supervision of a forensic pathologist. The residents are needed as designated pathologists to perform some of the autopsies properly in a medical examiner's or coroner's system (whether the reasons be economical or in the interest of time). Lastly, all pathologists should understand the significances of forensic science facts (such as powder tattooing patterns or drug levels) and feel at ease conversing with lawyers about autopsy findings.

It should be pointed out that a forensic autopsy is different from a hospital autopsy. Just as medical students learn to examine the living, most residents in pathology learn to examine primarily internally at autopsy for disease. Therefore, their training must be augmented in forensic pathology by teaching them to look externally as well as internally for signs of trauma, artifacts, and clues to a suspect.

The cause of death is not sufficient information in most homicides. The pathologist must document with photographs, charts, and written reports all findings (particularly external ones) regarding injury and disease to help determine the circumstances surrounding the death. These facts may help free an innocent suspect by showing that a death is really a bizarre accident. They likewise frequently show that the culprit's testimony is a complete fabrication.

Residents in pathology should be exposed to techniques for diagnosing manual and ligature strangulation, poisoning, concussion, the sudden infant death syndrome, the battered child, and other cases. They should be taught what can be learned from a decomposed, burned, or skeletonized body. They should learn when and whom to call for help on difficult cases.

<sup>4</sup> Considering that there are 392 programs with 2756 residents, the estimated average number in each program would be 7.

<sup>5</sup> Bureau of Vital Statistics, Columbia, S. C., personal communication.

### *Medical School Faculties*

When the initial survey results were reviewed, it seemed as though it was simply a matter of too few forensic pathologists available to do the work of autopsies and teaching. However, the second survey asked if one or more forensic pathologists were on the faculty and, surprisingly enough, 60 of the 91 responding schools (approximately 66%) did have a forensic pathologist teaching and doing forensic autopsies with residents. The survey of NAME members combined with the medical school survey revealed that 39 forensic pathologists are actively engaged in teaching in their specialty and 115 more are either on medical school faculties or willing to teach if asked.

### *Continuing Education in Forensic Pathology for Hospital Pathologists*

To consider a more hopeful set of facts, it should be noted for completeness that the American Society of Clinical Pathology (ASCP) is quite active in the area of continuing education in forensic pathology. There are usually two workshops yearly in Chicago, with an average of 50 pathologists a year taking five days of training in this area.

A newly formed ASCP program consists of a preceptorship that started this year at 18 training centers across the country. To date, 20 pathologists have each taken a week of training. At the national ASCP meetings, held four times a year, 20 workshops in forensic pathology are held yearly with approximately 400 pathologists taking 3.5 h of training.

### **Conclusions**

The most reasonable conclusion that can be reached with these data is that there should be a strong urging of curriculum committees to incorporate a required course or time for an elective course in forensic pathology in their medical school curriculum. With every department fighting for time it will not be easy, and teaching the course will take work. However, there are better textbooks and more teaching aids becoming available daily. The material lends itself to audiovisual presentation and can be available on slide/cassette presentations for those who wish to review material or are absent during a lecture.

We have been teaching forensic pathology since 1970 at the Medical University of South Carolina as an elective course. Even though the students have not received credit hours for the past three years, they still attend (approximately 70% of a 165-member class) on their one free afternoon each week to learn how to examine the dead. Our lecture elective consists of 20 h of lecture/slide presentations (Table 5A) with course objectives outlined.

It seems clear that we must teach forensic pathology and that our students, at least, appreciate the need for it in their everyday practice of medicine. The authors have accepted this challenge and urge those forensic pathologists who are interested but not presently teaching in their specialty to do the same. If we do not teach this material, who can and will?

### **Summary**

It is no wonder that some people refer to forensic pathology as the "hidden specialty." This paper shows evidence that the only exposure given to most medical students is a brief, all-too-explicit demonstration ("horror show") of interesting cases that can only attract the bizarre of mind into the field. It is further pointed out that even residents in pathology receive scanty, if any, formal training in most medical school residency programs, in spite of the fact that two thirds of the medical schools responding have one or more forensic pathologists on their faculty. The obvious answer is a change in the curriculum if this increasingly important subspecialty is to be saved.

**References**

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Address requests for reprints or additional information to  
Joel S. Sexton, M.D.  
Department of Pathology  
Medical University of South Carolina  
171 Ashley Ave.  
Charleston, S. C. 29403