SPECIAL ARTICLE

TOWARDS AN IMPROVED PATHOLOGY SERVICE IN GHANA

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INTRODUCTION

Pathology service in Ghana is still in its infancy due to inadequate personnel (Pathologists) and a poor perception of the role of the pathologist in health care delivery. The state of affairs in Ghana may be partly blamed on an accident of history, the anomaly resulting from which has been allowed to become the norm. In the days of the colonial administration of the Gold Coast, as a result of non-availability of forensic doctors, hospital pathologists, and in some cases other medical officers, performed medico-legal autopsies for the Coroner. The first health care laboratory in the then Gold Coast was the Accra Laboratory which was established around 1900. It subsequently, underwent improvements, including relocation in the 1920s, to the newly constructed Korle Bu Hospital. Its main function was to undertake research into tropical diseases, but it also carried out routine diagnostic laboratory work, including autopsies, both hospital and medico-legal.

The first full-time pathologist was appointed in 1914. The number of pathologists increased to about 8 in 1930, by which time clinical laboratories had been established in other hospitals in the country. During the Depression of the 1930s and World War II, the number of pathologists in the Gold Coast declined steadily. Part of their laboratory functions in hospitals, outside the main centres (Accra, Kumasi and Sekondi), were taken over by trained laboratory technicians and attendants. By 1952, complete re-organisation of the Laboratory in Accra, now an Institute, saw the separation into departments of Haematology, Chemical Pathology, Microbiology and Pathology. For more information on Medical Research and Laboratory Services in Ghana, the reader is referred to the Book by Addae[1].

Korle Bu Hospital being the largest hospital in the country at the time, had at least, one pathologist and was equipped with a mortuary, as well as the facilities to perform autopsies, during the period of development of the laboratories. These facilities were expanded to enable all types of autopsies to be performed on the Korle Bu premises.

Thus, by the 1950s, all medico-legal autopsy cases from the municipality and areas beyond were deposited in the Korle Bu mortuary and no longer in the accredited Public Mortuary which was then, under the care of Accra Municipal Council. Gradually, the Public Mortuary fell into disrepair and eventually was closed down. On the other hand, Korle Bu mortuary has seen more and more expansion over the years to the point where it now accommodates many hundreds of bodies, at any one time.

Along with the demise of the Public mortuary has been neglect in the training of medical personnel to perform medico-legal autopsies, leaving the increasing workload on the shoulders of hospital pathologists. To date, Korle Bu hospital has never, at any time, boasted of more than a handful of properly trained pathologists to perform the full functions of a pathologist. Indeed, Ghana, as a country, has only about a dozen fully trained pathologists and about half that number of trainee pathologists as at 2012 and certainly, no forensic pathologists. Although pathologists are able to perform medico-legal autopsies by virtue of the fact that the autopsy forms part of the training of a pathologist, the increasing demand for medico-legal autopsies in an ever-expanding mortuary has led to partial neglect of other more important duties of the hospital pathologist i.e. diagnostic pathology, which duties are essential in the management of patients. For a better understanding of the functions of a pathologist, it would be appropriate to define who the pathologist is and the training and functions of a pathologist.

Definition of a Pathologist

In the past, the term "Pathologist' has been used to refer to the doctor who specialized in Laboratory Medicine, the Laboratory Physician. Traditionally, laboratory medicine started as the specialty of 'Pathology'. With time, as laboratory medical practice grew, four increasingly distinct divisions gradually emerged, namely: Microbiology, Chemical Pathology and Haematology, in addition to the parent, now known as Anatomical Pathology. As the first three branches of laboratory medicine further grew and became more

specialized, they naturally, evolved into specialties in their own right. The term "pathologist' now refers to the anatomical pathologist, who has also been known in the past as "morbid anatomist" and is currently also referred to in some countries as the "histopathologist" or "cellular pathologist".

Essentially, these designations describe the core functions of the pathologists as they have evolved over the centuries. The emphasis of this paper is on the pathologist who will be the main subject of further discussion.

The pathologist is first and foremost, a physician and by extension, a clinician. Therefore, basic medical training and acquisition of basic medical skills is a prerequisite in the training of a pathologist. The reasons for these requirements are not difficult to appreciate. The diagnostic functions of a pathologist require thorough understanding of the structure and functions of the human body, both in the normal state and in the diseased state. Secondly, the pathologist is a scientist who is required to apply scientific methods of the laboratory in the diagnosis and management of patients. Application of scientific methods is the hallmark of laboratory medical practice. Thirdly, the pathologist is an educator who spends a significant proportion of his practice time explaining the mechanisms of disease to other clinical colleagues as well as medical and other paramedical students and professionals. These may be in the form of interpretation of laboratory test results or sessions in the autopsy suite. Fourthly, the pathologist is a leader who, by the very nature of his work, is involved in leading the investigation of disease and other human conditions. To explain these attributes of the pathologist, it is appropriate at this point, to describe the normal functions of a pathologist. Interested readers are referred to the book by Anim JT[2], for further details on the attributes of a pathologist.

Autopsy Pathology

I choose to discuss this function first because it was the foundation of the practice of pathology at the time of its establishment as a specialty of medical practice and before the evolution of the other three branches discussed earlier. Thus, an important aspect of the pathologist's practice has been to perform autopsies on dead patients, firstly to ascertain the cause of death, but also the circumstances and processes that led to death. In the days before the discovery of the compound microscope naked eye inspection of changes in the body at autopsy was the main method used in the diagnosis of disease and cause of death. With the availability of the microscope, pathologists have been able to study tissue changes in disease and that gave birth to the currently most important component of the functions of the pathologist – surgical pathology or histopathology. As surgical pathology gained in importance, autopsy pathology has seen significant decline, except those that fall in the category of medico-legal autopsy. These are legally mandated autopsies that are ordered by the Coroner or magistrate for the purposes of establishing the cause of death. This subject will be considered in detail later.

While autopsy on deaths occurring in a health facility is useful for the study of disease processes and also useful for improving clinical practice and medical education, it is often dependent on permission by the family or next of kin of the deceased. In recent times, there has been drastic reduction in the number of hospital autopsies, especially in developed countries, partly because of improved diagnostic techniques resulting from technological advances in medicine, but also partly from alternatives to standard autopsy techniques. The alternatives to the standard autopsy include techniques such as: post-mortem imaging studies, post-mortem tru-cut biopsies of suspected diseased organs and verbal autopsy. These techniques are gaining currency although discussions about their accuracy are still ongoing. Recent restrictions placed on organ retention in anatomical pathology practice in the U.K. have also contributed to the decline in the number of autopsies in that country.

Thus, apart from assistance with medico-legal autopsies when requested by the Coroner, the autopsy now forms not more than 10% of the workload of the hospital pathologist in many countries. In spite of this decline the autopsy is still of value in generating accurate statistics on disease patterns, their distribution and in modern times, for harvesting of organs for cadaveric transplants. In sum, although the autopsy has been the mainstay of the practice of pathology, it has given way, in recent times, to other activities of the pathologists which are considered more important because they have to do with management of living patients. These activities are discussed below.

Surgical Pathology

Surgical pathology is currently the main function of a pathologist in health care delivery. It involves the examination of tissue specimens removed by various surgical procedures, for diagnosis and further management of disease. In the process, the pathologist determines the possible cause of the disease, the underlying mechanisms leading to expression of the disease, the possible best approaches to further management and possible outcome of treatment. In short, the pathologist, with the help of the microscope and other laboratory methods, assists in the scientific understanding of the disease and its management. Of direct clinical help to the

surgeon is intra-operative consultation offered by the pathologist for the purposes of confirmation of diagnosis, but more importantly, for assisting the surgeon in refining the surgical procedure. The microscopic examination of tissues (histology/histopathology) is assisted by the use of various dyes that stain different components of tissues differently to enable interpretation of tissue changes due to various diseases. This basic technique has been complemented in modern times by immunologically based and molecular biology techniques that have helped to refine the diagnostic capabilities of the pathologist. In many pathology laboratories in developed countries, surgical pathology forms about 70% of the workload.

Cytopathology

Refinements in the quality of microscopes, has led since the mid 1800s, to the ability of the pathologist to examine individual cells in greater detail. Thus, it is possible now to define certain disease processes by examining individual cells or small collections of cells harvested from body fluids, secretions etc. in the area of pathology practice known as exfoliative cytology. More recently, cells harvested through needle suction of various masses caused by disease processes in the body, forms the basis of the procedure called 'fine needle aspiration cytology' (FNAC). The material harvested is processed and examined in the same manner as in exfoliative cytology. This procedure has gained currency for the diagnosis of many diseases which result in solid masses in the body, such that, pathologists now run FNAC clinics in many countries. Deep-seated masses in the body are accessed with the help of imaging guidance. In many health institutions, cytopathology forms about 20% of the workload of the pathologists.

With the above stated definitions of the functions of a pathologist, it is obvious that the functions of the pathologist in Ghana must be re-examined. Currently, the pathology department of Korle Bu Teaching Hospital in Accra performs up to 5,000 autopsies every year. In practical terms, this means that each pathologist or resident performs about 10 autopsies a day when on duty. The autopsy does not end with the procedure itself, it is followed by the writing of a full report for each case done. This translates into over 60% of the workload of the pathologist. Add to this the fact that the senior pathologists are, in fact, academic pathologists and as such, Faculty members of the University of Ghana Medical School with the prime duty to teach pathology to undergraduates and postgraduates of the medical school in addition to all allied Faculties of the College of Health Sciences of the University of Ghana. Approximately 80% of the 5,000 autopsies are medico-legal autopsies ordered by the Coroner. These are not the prime responsibility of the hospital pathologist or of the academic pathologist. In fact, they are performed by these pathologists, simply to assist the Coroner in the discharge of his duties. This is the result of the current anomalous set-up in which all deaths in the community are deposited in the hospital mortuary. These cases then become the responsibility of the pathologist and are attended to at the expense of more important diagnostic pathology duties. As an illustration of what actually happens in the pathology department of Korle Bu Teaching Hospital the following scenario should be informative:

A typical week on autopsy schedule starts with an allocation of between 15 and 20 cases daily for a team consisting of one senior pathologist and two resident pathologists. Each pathologist performs 6-8 autopsies in a 5-hour working period interspersed with correction of notes dictated during the autopsy procedure. This means that each autopsy lasts for about 30 minutes, hardly enough time for proper dissection of the organs. The time may be enough to establish cause of death, as required by the Coroner, but is certainly not enough for the detailed examination of all organs required for a hospital autopsy (a hospital autopsy requires an average of 3 hours). The pathologist spends the remaining working time of the day writing a complete report for each case. This is without considering the fact that the academic pathologist may have one or more hours of lectures in the day. Added to this are other demands on the time of the academic pathologist.

The next week sees the pathologist moving on to do surgical pathology and or cytopathology. During this period, the pathology resident does an average of 20 specimens a day, each requiring full description and sampling of tissues for processing. The team of three pathologists is handed about 30 cases a day each having an average of 6 slides for diagnosis. It is during this period that the pathologist requires maximum concentration to carry out microscopy and report on the cases for the treating physician to carry out further management of the patients. Unfortunately, this time is shared with completing autopsy reports either for the Coroner to dispose of the cases, or for relations of the deceased to obtain death certificates and burial permit to bury their dead. Under the circumstances, these distractions are partly responsible for delays in issuing surgical pathology and cytopathology reports in the department of pathology. In situations where the autopsy load is not heavy (in the UK, pathologists perform 1-2 autopsies in a week), there is ample time to complete the autopsy reports and also no hindrance or division of attention during surgical pathology or cytopathology duties.

This leaves enough time for detailed study of all surgical pathology cases and for the resident, enough time for reading and study of their cases.

THE WAY FORWARD

The current state of affairs has become accepted as the norm in Ghana, in spite of the fact that it conflicts with the normal duties of the pathologist in the hospital, as explained above. In this regard it was saddening to observe a recent advert in the Ghanaian daily newspaper The Daily Graphic[3] inviting tenders for the installation of 250-body capacity extra refrigerators for the mortuary of Komfo Anokye Teaching Hospital in Kumasi.

The question to ask is what purpose these extra body refrigeration facilities would serve in patient care or teaching or even research in the Teaching Hospital. Is it an indication that hospitals in Ghana are losing sight of their primary role of providing facilities for patient care such that patients admitted to the hospital can be effectively treated for them to return home to their families, healed or at least, better than they were before admission to the hospital? Has the prime role of the Hospital changed to that of providing accommodation for dead bodies, so that income can be generated from storage and embalmment? These are questions that must be seriously addressed. To do so, the following suggestions are being offered as a way forward, to review and improve the practice of pathology in Ghana.

1. Administration of the Coroner's system must be strengthened as provided for in the Coroners Act 1963 (Act 18) of Ghana. Under this Act, all deaths in the community, as well as some occurring in health facilities, fall in the jurisdiction of the Coroner (the District Magistrate) whose duty it is to direct them to be investigated for the cause of death to be established.
2. For (1) to be efficiently administered, the Public mortuary system must be reactivated and administered by the various District or Municipal Administrations of the country for the use of the Coroner. All deaths in the community will be deposited in the Public mortuary for the Coroner to dispose of after the cause of death has been ascertained. This would ensure that the mortuary of Pathology departments of Hospitals handle only deaths that occur in the hospital and that do not fall in the jurisdiction of the Coroner. The pathologist would then deal appropriately with such dead bodies in accordance with their normal practice which includes an autopsy where necessary, to complete investigation of the patient's disease and also for teaching purposes.
3. Where the Coroner orders further investigation into the death of cases deposited in the Public mortuary, these may include a forensic autopsy that, under ideal circumstances, are best carried out by a Forensic doctor or a Forensic Pathologist. Because there are no Forensic doctors or Forensic pathologists in Ghana at the moment, there is the need to train such personnel as a matter of urgency. The training of such medical specialists is set out below. However, until facilities and personnel become available locally to train medical graduates in these sub-specialties, it is suggested that the Ministry of the Interior, in conjunction with the Ministry of Justice, could sponsor interested medical graduates to be trained in institutions outside Ghana in Forensic medicine. This would ensure early manpower development in this deprived area of medical specialization. After all, both the ministries of Defence and the Interior have and still sponsor the training their own doctors for their respective health facilities in Ghana. In the interim, the current arrangement in which Pathologists working in the hospitals and teaching institutions are contracted by the Ministry of Justice/Judicial Service to assist the Coroner in the investigation of deaths needs to be re-organised and improved, along the lines of the arrangements that have been put in place by countries like the UK and the USA.
4. Other aspects of investigation of medico-legal deaths apart from the autopsy include police investigation of the circumstances of death and whether or not there is suspicion of foul play. Establishment of the circumstances would influence the nature of autopsy examination required and also determine the need for other lines of investigation, including toxicology, ballistics investigation and even paleopathology and anthropological studies. All these complex investigations are best carried out in a specialised institution outside the hospital, preferably, sponsored jointly by the Ministry of the Interior and Ministry of Justice/Judicial Service, with assistance from the Ministry of Health. In this regard, it may be suggested that Ghana as a country, deserves an Institute of Forensic Science where all the above-mentioned investigations and studies can be carried out. Such an institution would also serve as a training institute for the personnel required to assist the Coroner in his duties.

Training of Forensic Medical Personnel

For effective implementation of the Coroner's system, full and complete training of a forensic pathologist may not be necessary, although this calibre of medical specialist would be ideal for the purpose. On the other hand, the training of a forensic doctor may be adequate in ensuring that an autopsy to establish the cause of

death is performed and any further need for histological examination referred to the pathologist. It is obvious that there are basic differences in the training of the two categories of medical personnel, as is outlined below.

1. Training the Forensic Pathologist. This medical specialist undergoes an initial postgraduate training as a Pathologist, usually through residency training for a period of about 4-5 years. This is followed by further training in Forensic Medicine for about 2 years, during which details of forensic medical practice, including crime scene investigations are learnt. Thus, the forensic pathologist, in addition to being an anatomical pathologist with skills in surgical pathology (histopathology) and cytopathology, is able to carry out medico-legal autopsies and also participate in crime-scene investigations, including exhumations, investigation of disaster deaths, mass murders etc.
2. Training the Forensic Doctor. The training of a Forensic Doctor is for the shorter period of about 3 years. The medical graduate is trained purely in forensic science and autopsy practice. Thus, he does not receive any formal training in anatomical pathology, but is able to perform medico-legal autopsies and participate in crime-scene investigations. Such a medical specialist would adequately serve the purpose of the Coroner's investigations, as the majority of medico-legal autopsies may not require further histological confirmation and the cause of death based on naked-eye examination of organ changes at autopsy may be adequate. Where histological examination is required for confirmation, help may be sought from the anatomical pathologist.

Role of the Hospital/Academic Pathologist

The training of an anatomical pathologist includes training in autopsy methods for all aspects of investigation of disease, as discussed earlier. Therefore, the anatomical pathologist is able to perform, both the thorough autopsy investigation of deaths occurring in the hospital and the type of medico-legal autopsy which frequently requires the establishment of cause of death only. In this regard, where the Coroner deems necessary, or where the forensic doctor is unable to cope because of sheer numbers of cases requiring autopsy, the Coroner may request assistance of the hospital doctor. This arrangement is common in most countries because the majority of such cases do not require any further investigations beyond establishment of the cause of death. For such purposes, a special consultancy is arranged between the Judicial Service and the pathologist providing the service, who may be required to give evidence in court or at the Coroner's inquest.

Projections for an Improved Pathology Service in Ghana

The current total strength of trained pathology is not up to 15 in the whole country, with the majority concentrated in the two major teaching hospitals at Korle Bu and Kumasi. Every health institution that is equipped with surgical facilities (general surgery, special surgery and gynaecological) must, of necessity have a functioning pathology service. This is to ensure that all tissues and cellular specimens taken from every patient are subjected to histopathological and or cytopathological examination and diagnosis. This is not only for scientific and evidence-based medical practice, but is also the patient's right, with attendant medico-legal implications. Therefore, to ensure that medical practice in Ghana is brought in line with current 21st Century medical practice, as obtains in other countries, there is the need to speed up the training of adequate numbers of pathologists, as well as other Laboratory Physicians. The suggested minimum numbers are: one pathologist for each District Hospital in Ghana and at least two for each Regional Hospital. The teaching Hospitals would each require several pathologists, as required for effective undergraduate teaching, postgraduate instructions and research, in addition to providing service to the hospital. Some institutions in developed countries have not less than 10 pathologists in one department of the teaching hospital. With those numbers, subspecialisation becomes easy, with increased scope for research and expansion of both the service and science of pathology. The current needs of Ghana, in terms of pathologists, would therefore, be of the order of at least, 50 pathologists, as against the current number of less than 15.

The situation is not much better for other branches of Laboratory Medicine namely, Haematology and Blood Transfusion, Clinical Microbiology and Chemical Pathology. That the hospital laboratories should be headed and properly managed by laboratory physicians is without question. The only way to ensure this is to fast-track the recruitment and training of this cadre of medical specialists to help raise the standard of medical practice in the country.

CONCLUSION

The discussion above concerning the current functions of the Coroner and the Pathologist, details a state of affairs which may be described as unsatisfactory, both from the point of view of the Coroner's system and also, from the perspective of the practicing pathologist in Ghana. It is wholly unacceptable for pathologists to be constrained to spread themselves so thin on the ground to the point of becoming inefficient in their core functions of providing scientific support in clinical management of patients. Here, I refer specifically, to

delays in issuing reports on biopsies taken from living patients for the purposes of definitive tissue diagnosis and also, the current non-availability of intra-operative consultation service even in our teaching hospitals. This has negative repercussions on the quality of patient care not only because of the workload, but also because it has made specialization in pathology unattractive to young doctors. New medical graduates who express interest in pursuing a career in pathology are frequently put off by the sheer numbers of medico-legal autopsies that they consider not directly related to what they would like to do as pathologists. On the other hand, some young medical graduates have expressed the desire to do forensic medicine.

It is the opinion of this writer that until specialist Forensic Doctors and Pathologists, as well as facilities become available for training these medical graduates locally, they will continue to choose other career paths, those for which training facilities are currently available in the Ghana College of Physicians and Surgeons, or even the West African Colleges of Physicians and Surgeons. The time has come for the Ministry of Justice/Judicial Service and the Ministry of the Interior to take up this challenge and put in place a sponsorship programme to ensure training of adequate numbers of Forensic Doctors to assist the Coroner. There are institutions in the UK, especially Scotland (Universities of Glasgow and Aberdeen, for example) and also the USA that offer training in forensic medicine to medical graduates. These institutions may be approached and requested to fast track the training of personnel for the country. Training of about 2 graduates per year for the next 5 years would ensure adequate numbers of forensic doctors in the country to commence a local training programme within the next few years.

It is also imperative to strengthen the administration of the Coroner's system by reactivating the Public Mortuary facilities, so that the Coroner's system can function more efficiently. Although the Coroner's Act has no specific provisions on Public Mortuaries, availability of such facilities has helped to strengthen and ensure efficiency of the Coroner's system in other countries. This proposal is being made as a means to de-congest the hospital mortuaries and at the same time, remove the current public perception that rather than provide facilities for patient care, hospital authorities source for funds to expand mortuary space for the purposes of income generation. The Ministry of Interior would also need to intensify the training of investigating officers in crime investigation to complete the set-up necessary for comprehensive investigation of medico-legal deaths in the country.

FURTHER READING

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