THE SCOPE OF MORBID ANATOMY IN THE ARMY MEDICAL SERVICES.

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(Based on five years' experience in India, Assam, and in B.L.A.)

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On entering the Army as a pathologist one felt that Morbid Anatomy was regarded as the "Cinderella" of the Army Pathological Services. At the outset of the war, at least, the morbid anatomist felt there was no place for him and he encountered, or felt he encountered, a certain prejudice against the idea that he could adapt himself to the more generalized field of Army pathology. But five years in the Army Pathological Services convinced one that the morbid anatomist can adapt himself more readily to the general requirements of Army pathology than the bacteriologist or the so-called "clinical pathologist." In no department of pathology more than in morbid anatomy does so much depend on the personal experience of the pathologist. On active service, where one lacked the facilities of a University or scientific department, this truth was borne in upon one with great frequency during the past six years.

Coming, as it did, amongst the multitudinous tasks of daily laboratory work, autopsy work seemed scanty and sporadic in nature, but, reviewing the cases as I have done from the fairly complete records which I managed to keep, I have been struck with the wide range of the material and the real interest of so many of the problems presented. Though of a different character the field was no less interesting, and certainly not so narrow, as that encountered before and after in the Autopsy Service of a teaching hospital.

Post-mortem examinations were considerably fewer annually, of course, but the autopsies were done with a specific purpose or problem in view other than that of routine recording or of the teaching of students. Perhaps my experience was a fortunate one, but I was frequently gratified by the real interest shown in the autopsies by the clinicians and I, amongst others, have learned that scientific and professional keenness and enthusiasm can be found in all walks of our profession as sincere as, and no less able than, in the teaching hospital for example. Perhaps the circumstances were often ill-suited to encourage one's clinical colleagues to come to an improvised "mortuary" in a disused hut or in a "160-pounder" tent, or even behind a crude canvas awning in a Normandy ditch! But they came with gratifying frequency—often from inconvenient distances, often ignoring tropical heat, a plague of flies or other such potential excuses—to stimulate with question and observation with no purpose other than scientific curiosity, a curiosity
which was manifestly present in no less measure there than in first-class
civilian hospital and teaching units.

 Naturally much of the autopsy work had a distinct medicolegal flavour,
sometimes frankly so, as when one was called upon to perform autopsies in
murder and homicide cases, sometimes potentially so, as in the cases of persons
found dead or in accident cases. Interest and responsibility were added in
that the Army pathologist, often in a more senior consultant position than
his civilian equivalent, was called upon to act in an executive as well as
advisory capacity—there was no Coroner from whom advice could be sought:
on the contrary one might have to advise the A.D.M.S. what line of action
might have to be taken in a suspicious case.

 Even in the "ordinary" medical case, the deceased having been a soldier
"on active service," it was the least one could do in the exercise of one's duty
as a pathologist to apply the most meticulous care in the post-mortem
examination and in the preparation of the report, always with the possibility
of legal repercussions in view. A careful post-mortem examination could,
and often did, disclose unsuspected factors in a case. The deceased's friends
and relatives or executors were usually at the other end of the earth, even his
doctors and attendants had observed him but for a relative moment within
the orbit of his life; and some day, perhaps, when his documents, having
survived the inevitable hazards of time, distance, the elements, the enemy
and the great military bureaucratic machine, finally reached a Pensions
Tribunal, the observations recorded, and the opinions expressed by the
pathologist, might prove crucial to the interests of the deceased's relatives.
And so the least the pathologist could do was to observe accurately the dead
tissues before assigning them to burial and to record their lesions succinctly,
critically and with all the impartiality of which he was possessed.

 None of us is infallible at any stage of his experience, but training can do
much to minimize our fallibility within a given field. When called upon to
give an opinion I think that the Army pathologist feels the conflict between
his responsibility and his own inexperience in no department of his work as
acutely as in a morbid anatomical problem. On such an occasion Cinderella
becomes the beautiful Princess for a brief moment!

 In the type of case that might have legal repercussions, interesting
preliminary problems would often arise with regard to the preparation of the
report. Firstly, there was the question of the authority for the post-mortem.
For the pathologist to a military hospital, this was perhaps simple; such
authority was implicit in the C.O. But for the pathologist in charge of an
independent laboratory I have often thought the problem a rather tricky one,
legally. In actual practice I have never experienced any repercussions on
this score, but in semi-legal reports I have always taken the precaution of
stating as a preamble "Acting under the authority of the Officer Commanding
such-and-such a Hospital," or "of the A.D.M.S. such-and-such a formation."
Who does stand in loco parentis in the Army?

 Secondly, the question of identification of the deceased might well arise—
yet never once in a number of military courts when I have given evidence as
an "expert witness" have I ever been cross-questioned on the identification of the deceased! And yet this identification had often an annoying habit of being obscure. Sapper X was brought in dead, having been found unconscious in a "liberated" café in Normandy; discs missing: vague rumour had it he belonged to No. X Coy., R.E., now careering happily in pursuit of the enemy across the Seine. Or a body, found drowned, clad in British Army uniform, was brought in by the civilian police somewhere in Belgium; the nearest Security Investigation Section was still at Rear H.Q. or elsewhere, but the hospital C.O. wanted the body buried quickly, and passed same to the pathologist "for the necessary action." In that type of case, rightly or wrongly, while advising the notification of the case to the S.I.S. or the A.D.M.S. and having had a personal word on the telephone with my A.D.P., I have usually proceeded to the autopsy and made a careful record of marks of identification on the clothing, body, etc., along common-sense lines as for civilian medicolegal cases.

Thirdly, as in civilian practice, it is obviously desirable to reduce one's report to non-medical language as far as possible having regard to the fact that the lay members of a Court of Enquiry are usually, by virtue of youth and inexperience, much more likely than professional legal men to founder in a sea of medical terminology.

Lastly, one has always tried, with all due regard to the need for brevity, to record impartially under the heading "Post-Mortem Findings" only factual observations made at the autopsy; while the conclusions and opinions drawn therefrom were mustered separately under a conspicuous heading of "Conclusions and Opinion," the statement under which followed some such preamble as "From the foregoing findings, made at autopsy, it is my opinion that, etc., etc."

All that may seem self-evident, but during a period when called upon as acting D.A.D.P. to scrutinize the pathological reports of others one was surprised how infrequently reports were prepared in such a way as to be likely to withstand logical dissection.

My collected records of such interesting cases during the years 1940-1943, spent abroad mainly in India, Assam and the Middle East, and in the B.L.A. (France, Belgium and Norway) from June, 1944, till autumn of 1945, number just over a hundred.

The types of case encountered I shall divide into nine categories and exemplify with cases of special interest:—

(1) CULPABLE HOMICIDE GROUP.

Altogether these numbered six; four in India and two in France, the latter both arising in the American Forces though here one was called upon to perform the autopsies and send in reports. Five of these were frank murder cases. The four Indian cases were all in I.O.R.s—in one the victim had been assassinated with a kukri, in two with rifle shots and in one with a dagger—and in all, evidence had actually to be given in person, once before a Civil Court and on the other occasions before Courts Martial.
In the kukri case the medical testimony was straightforward, as the victim had been almost beheaded, but in this case an interesting defence was maintained that blood on the kukri in question was fowl blood and not human. The military police authorities in Assam pressed for a precipitin test on the dried blood on the knife, but here one had to adopt a firm line that such a procedure was beyond one's powers and experience, and one was obliged to insist that the problem be referred to civil authorities. Experience has taught that one must refuse to undertake examinations which one is legally inadequately qualified to perform. One's testimony can be invalidated at the outset if it can be shown that one has insufficient experience to perform the examination in question.

In one of the G.S.W. cases the defence was submitted that the shot was fired at such a long range that it could hardly have been done with murderous intent. When one was instructed to perform a post-mortem examination the police had indicated that there was no doubt that this was deliberate homicide. Luckily careful measurements and photographs had been made, and careful notes taken as to the absence of tattooing, and one insisted on confining oneself to these observations throughout a somewhat prolonged argument between Counsel as to whether this could have been accidental or not; the medical witness adopted the attitude that he could not claim to be a ballistics expert.

In the other cases the medical evidence was formal, the legal issues apparently being soluble on other grounds.

(2) FOUND DEAD OR DROWNED.

There were four cases, found drowned, and these certainly presented the greatest trouble of all. Firstly, in two there was the problem of uncertain identification in bodies which had been immersed, one in the sea for four or five days in the Tropics; one in a canal in France for a period of probably ten to fourteen days. Secondly, there was the problem of the possibility of contributory causes of death, such as disease or injury, and in the latter event whether accidental or assault.

The other case in the group was that of parts of a body found, some six months after, in the hold of a burnt-out ship; here the problems were manifestly to decide (a) whether death was due to burning and, if so, did this occur at the same time as the ship's fire or had it been put there afterwards; (b) as far as possible, the identity of the corpse. A few unburnt fragments of American service uniform, a skull of apparently "European" type, portions of a male pelvis, femur and tibia were about all that remained.

Another problem case was an I.O.R. who was found drowned after a previous attempt at suicide by smoking datura. He had primary syphilis.

(3) THE POISONING GROUP.

Apart from one case of suicidal datura poisoning the only other cases were deaths following over-indulgence in alcohol. Three fatal cases which occurred together in American enlisted men were due to the drinking of crude wood alcohol.
More interesting were cases allegedly due to drinking of spirits; in one case the spirit taken was "Calvados," looted from an abandoned dwelling-house, and in the other case it was a cheap cognac from an enemy supply dump. In both cases even senior officers were too prone, it seemed, to consider that death was due to some specially toxic quality of the liquor when in actual fact the liquor taken was only the indirect cause of death, autopsy showing clearly that death was due to asphyxia from inhalation of vomit.

The case of Gunner X is instructive. The man had been missing for twenty-four hours. He was brought in to his unit M.I. Room having been found "unconscious" in a disused billet. An empty Calvados bottle was found by his side. On examination by the Medical Officer he was stuporose and restless, but not aggressive; with stertorous breathing, a rapid feeble pulse and subnormal temperature, pupils contracted but equal and reacting sluggishly to light. The reflexes were absent; there were no signs of spasticity. The Medical Officer attempted, but failed, to pass a stomach tube and decided to evacuate him to the nearest hospital. The patient was placed, unattended, in an ambulance car; and on arrival at hospital was found dead.

The alacrity with which all concerned in the case believed that death was due to the particular virulence of the liquor in question was interesting to observe; the respiratory passages, at autopsy, were full of stomach contents!

A third case in this group had an interesting twist to it.

Driver X, R.A.S.C., driving a large petrol carrying vehicle from the Normandy beachhead to the Belgian frontier stopped outside a roadside inn in France. To avoid obstructing the roadway he turned his vehicle (one with a trailer attached) into a narrow farm road leading past the inn off the main roadway. Having eaten his ration and drunk a toast to victory with the local innkeeper, he decided to set off in the dusk of evening, taking the remaining half-bottle of cognac with him. Reversing into the main road promised to be difficult and he decided to continue down the farm road and rejoin the main road half a mile further on. This involved passing a slight bend which, because of the narrowness of the road, he failed to negotiate, and he ditched his vehicle in the shallow roadside drain. Assistance at that hour was impossible to obtain, so he apparently decided to spend the night in the driving cab, refusing hospitable offers of a bed from a local peasant. In the morning he was found dead at the driving wheel with the empty cognac bottle at his side. The engine was warm and the petrol tank almost empty. Post mortem the body presented the appearances of carbon monoxide poisoning, though alcohol was undoubtedly present in the stomach, and from the evidence presented in Court it appeared probable that he had started the engine during the night (to keep himself warm?) and had fallen asleep over the wheel; engine gas could have come up between the loose floor boarding from the little earth pit which the wheels had scoured out in the soft earth.

(4) Therapeutic Accidents.

In this category one includes two cases of death that occurred within the same week from injection of an organic arsenical in the treatment of early syphilis in two I.O.R.s. Another curious case was a fatal purpura which occurred in an Englishwoman, wife of a British officer, following the injection of an ordinary ("booster") dose of typhoid paratyphoid vaccine. Into this category, too, fall two cases of genuine air embolism, one following an attempt at suction drainage of an amebic abscess of liver and the other following careless handling by an orderly of a plasma transfusion set in a C.C.S. in Normandy.
In the latter case a bottle of plasma was fitted to the infusion set to replace a complete empty saline bottle; the set was of an older pattern with rather wider and longer rubber leads than normally, the potential capacity of these alone between bottle and arm being between 12 and 15 c.c. A failure of the plasma to drip was "corrected" by the nursing orderly, who applied a positive pressure by pumping in a good head of air above the plasma with the aid of a Higginson's syringe. The air imprisoned between the plasma bottle and the needle was thus forced into the vein.

Other therapeutic accidents occasionally encountered were two cases of suppurative spinal meningitis following spinal anaesthesia and lumbar puncture.

All such cases put a good deal of responsibility on the shoulders of the pathologist and demand a tact and discretion sometimes beyond his years and standing, especially when one bears in mind the close domestic relationship into which he comes with his clinical colleagues.

(5) ANÆSTHETIC DEATHS.

These were, happily, remarkably few—in fact only two, which were due to undoubted idiosyncrasy to pentothal sodium. One other case was the death under nitrous oxide and ether anaesthesia for the treatment of haemorrhage from assault wounds, both the haemorrhage and the wounds generally being relatively trivial.

(6) "ENEMY ACTION" OF OBSCURE NATURE.

Many and varied were the wounds that presented apparently inexplicable features, and these from time to time aroused the strangest suspicions of new toxic agents in missiles. The first case of fat embolism which came to autopsy in Normandy had aroused the most ingenious speculations! Fulminating anaerobic infectious wounds twice caused "obscure" deaths. One of these which presented itself as an acute mania within a few hours of wounding had a "foamy" liver and gross gas changes in all the organs including the brain within two hours of death. In the other remarkable case occurring in Normandy in a B.O.R. with shell wounds, a curious rigidity of the limbs resembling rigor mortis, observed in a very toxic patient a few minutes before death, ushered in a generalized and immediate rigor mortis after death: this was almost certainly a fulminant tetanus infection.

(7) ACCIDENTAL TRAUMA.

These naturally formed a fairly high proportion of the cases of medicolegal nature; on the one hand the cases of gross skeletal and visceral injury needing only a formal report that death was "due to the direct effects of haemorrhage and shock from the injury: there were no other contributory factors." A high proportion are head injuries.

But in this group the real interest lay in the relatively high proportion of cases where death was the unexpected result of an apparently trivial injury, e.g. a blow on the abdomen resulting in the rupture of an apparently healthy spleen.

A case of this type was that of L/Cpl. X, of the C.M.P., athlete and physical training instructor of his unit, a robust muscular subject of 30, previously fit and well. Suddenly, while demonstrating a simple jumping exercise, he fell backwards for no obvious reason.
and struck the back of his head on the ground. When picked up he was found to be unconscious and died some two hours later. At autopsy there was light bruising of the scalp over the occipital region, but inside the skull quite a considerable hemorrhage in the subarachnoid space round the medulla. Careful examination of the skull and of the atlas and axis vertebrae revealed no fracture and no tear of the dura. The actual source of the hemorrhage was not found—it was certainly not from any of the major vessels in the vicinity—and the cerebral vessels showed no congenital aneurysm formation nor any atheroma. As far as the writer is concerned, the mechanism of the injury is still a mystery—I have always felt that in this case (having regard to the statement given by witnesses) the patient had some intracranial catastrophe first, before falling, and that the subgaleal hemorrhage was due to direct impact on the ground but that the intracranial hemorrhage was caused in some other way—as by bulbar impaction due to a bad landing during the jumping exercise.

(8) THE OBSCURE "MEDICAL" DEATHS AND THERAPEUTIC FAILURES.

These, of course, formed the most numerous and varied group, and in India and Assam at least covered a wide field of medical and tropical diseases which was an educational course in itself. There were the cerebral malarias, the anæmias and the typhoid fevers that seemed to defy what should have been the most timely treatment. And there were the inevitable clinical mistakes, each a lesson in itself, such as this:

Pte. X, aged 35. Treated for amœbic dysentery in Iraq and pronounced cured. Over a year later in Iraq he developed upper abdominal pain. Examination revealed an epigastric mass, apparently solid. A routine examination of the stool on two occasions disclosed "no amœbic cysts." A clinical and radiological diagnosis of tumour of the stomach was agreed upon and laparotomy performed. This revealed a large "cancer of the stomach already adherent to the liver," regarded as inoperable by the surgeon. The case was transferred to base and reconsidered by a consultant surgeon. Laparotomy was repeated; mass "larger and now definitely inoperable." The patient was evacuated to India—a hopeless case. Patient was grossly emaciated and the laparotomy wound beginning to break down from secondary cancerous invasion. He died shortly after admission to hospital in India. At autopsy, the "mass" was an amœbic abscess of the left lobe of the liver with inflammatory adhesion to the stomach wall; there was advanced active amœbic colitis; and the "secondaries of the abdominal wall" were nothing other than entamœbal lysis of the abdominal wound.

(9) THE "UNSOLVED MYSTERIES."

Inevitably, there are a few cases the unlaid ghosts of which stalk in one's memory; some clue was missed either clinically or at autopsy, or the range of personal experience either of clinician or pathologist was not just wide enough to compass this odd variant of some otherwise "common" disease. At all events, some aspect of it remains unsolved. One recalls in this connexion the two obscure cases finally reported as "encephalomyelitis," one of a Landry type, occurring at the time when one's facilities for histological work were inadequate.

The foregoing is of necessity a somewhat sketchy review of an Army pathologist's experience in the field of morbid anatomy and forensic pathology, but one likes to feel that even amidst the distractions of active service in various foreign fields and amidst the more immediate and urgent problems of the
campaign or the actual battle, we were able to pursue truth for truth's sake. Though we "groused" at the time, in retrospect we must admit that the frequent lack of static laboratory facilities was no real impediment to pathological investigation. Most of us found in ourselves unexpected powers of compromise and improvisation in this as in other fields of work and endeavour!

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