The value of autopsy bacteriology

A case report and review of techniques

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Summary

A case of fatal post-traumatic purulent meningitis is described. While no antemortem aetiological diagnosis was available, autopsy bacteriology yielded a pure and profuse culture of *Streptococcus pneumoniae*. The problem of postmortem microbial contamination is discussed and recommendations for appropriate autopsy techniques are presented.

While in the early part of the 20th century the practice of postmortem bacteriology enjoyed considerable support, there was until very recently a marked decline in interest in this field by clinician and pathologist alike. This view is supported by the paucity of reports appearing in the English-language literature during the period 1922-1955. However, two extensive studies of autopsy bacteriology subsequently conducted in the USA demonstrated anew the diagnostic value of this procedure and suggested its usefulness as a routine technique.

We present a case of suppurative meningitis in which postmortem bacteriology yielded the aetiological agent.

Case report

The body of a 52-year-old Black man was examined at the State mortuary in Diepkloof, Johannesburg, in July 1983. The medical information accompanying the body indicated that the deceased had been assaulted 8 days before his death. Three days after the assault he was admitted to hospital with a 1-day history of confusion. Examination at that time revealed a recent 7 cm laceration over the left eyebrow with an associated periorbital haematoma. Although no other overt signs of central nervous system dysfunction were documented, a lumbar puncture was performed in view of the patient's condition. The result was a turbid cerebrospinal fluid with a polymorphonuclear leucocytosis. No bacteria were seen on Gram staining. The patient's condition deteriorated and he died later the same day. Because of the history of assault the body was transferred to the State mortuary; no further information was received about subsequent laboratory findings.

At autopsy several minor abrasions were noted in addition to the laceration mentioned above which extended onto the bridge of the nose. A 2 x 2 cm haemorrhage was present within the epicranial aponeurosis and subcutaneous tissue of the left frontal region of the head; beneath this lay a minute hair-line fracture of the skull. Examination of the brain revealed a suppurative leptomenigitis overlying both cerebral hemispheres and extending to the base of the brain. The brain itself was uninvolved by oedema, infarction or haemorrhage.

In view of the antemortem diagnosis of a probable meningitis, a specimen of leptomeningeal tissue and underlying brain was removed (as described below) and submitted to the Department of Microbiology at the South African Institute for Medical Research for bacteriological examination. Culture of these tissues yielded a profuse growth of a penicillin-sensitive *Streptococcus pneumoniae* and a final diagnosis was made of post-traumatic bacterial meningitis due to this organism.

Discussion

The correct taking of autopsy specimens for bacteriological examination may be of immeasurable value both in confirming a presumptive antemortem diagnosis and in highlighting an obscure and possibly unsuspected organism as the cause of a patient's illness. However, the effort and expense involved in postmortem bacteriology studies is justified only if the results reflect a positive correlation with antemortem microbial status. This is particularly important in forensic practice where the issue of a correct antemortem diagnosis may be raised in court. For too long pathologists and clinicians have blindly accepted the tenet that postmortem bacteriology is of little value because of agonal and postmortem invasion of normally sterile tissues by endogenous microflora.

Several independent studies, however, have confirmed that bacteriological cultures are not invaded by migrating endogenous flora for 24-48 hours after death. The study of Wood et al. of a series of 62 autopsies revealed that 83% of all cultures obtained within 15 hours of death agree with antemortem microbiological findings. Kurtin, in a study of 50 autopsies, suggested that similar results could be obtained up to 48 hours after death. Knapp and Kent and Klastersky et al. have shown a strong correlation between infection as the clinical cause of death and postmortem recovery of bacteria from the lungs and heart blood, especially in the presence of disseminated intravascular coagulation. While the potential for internal dissemination of organisms after death cannot be discounted entirely, appropriate procedures may counteract this potential.

In performing autopsy bacteriology two techniques are available to the forensic pathologist. The first is a highly elaborate and sterile technique first described in 1965. This is often impractical for routine use in a busy mortuary. The second procedure, which was employed in this case, was initially described by workers at the M.D. Anderson Tumor Institute in Houston. This purportedly yields microbiological results equivalent to those achieved by the sterile autopsy technique. In this latter method all specimens are obtained when the body or cranial cavities have been opened but before the organs have been manipulated or vessels ligated. An approximate area of 3 x 3 cm on the surface of the organ from which the specimen is to be obtained is seared with a hot steel spatula passed through the flame of a bunsen burner. The centre of the sterile field is lanced and a sterile swab
introduced for sampling; alternatively, as in the case described, a 1 cm² block of tissue is removed and placed in a sterile Petri dish for transport to the clinical laboratory. In suspected meningitis the calvarium must be removed without tearing the dura. Where brain tissue alone is required, as in encephalitis, separate instruments should be used from those employed for incising the dura.

With the above techniques, and mindful of the postmortem diffusion of micro-organisms 15 - 48 hours after death, the medical examiner may obtain useful and confirmatory information on the patient's antemortem microbial status.

REFERENCES


Agenese van die galblaas

'n Gevalbespreking

C. F. BRINK, J. P. MYBURGH

Summary

A case of agenesis of the gallbladder presenting in adulthood and its treatment are described. The relevant literature is discussed and the significance of this rare condition for biliary surgery is stressed.


Agenese van die galblaas is besonder seldsaam. Hoewel die toestand as 'n toevallige bevinding tydens nadoedoende ondersoek beskryf is, is enkele pasiënte tog aangeteken waar die toestand klinies voorgedoen het met die beeld van cholesistitis. Volgens sommige auteurs is daar min of meer 200 pasiente met hierdie se mannier van gebrek aan die 'n sewe-en-vyftigjarige Blanke sakeman het voorgedoen met epigastriese pyn en buikopsening na etes. Hoewel sy simptome die voorafgaande 2 jaar prominent was, het hy 'n geskiedenis van vae spysverteringskanaalklagtes gehad wat sedert sy kinderjare teenwoordig was. Vier jaar tevore is 'n duodenale ulkus met behulp van 'n bariummaal-ondersoek gediagnosticer en is die pasiënt hiervoor behandel. Hy was egter nooit simptoomvry nie en het verder ook vae klagtes van moegheid beskryf. Hy het geen vorige buikoperasies gehad en geen medikasie gebruik nie.

Kliniese ondersoek het 'n skraal middeljarige Blanke man getoon wat chronies siek voorgekom het. Daar was teerheid in die epigastrium en regterhipochondrium sonder enige sistemiese afwykings. Die hematologiese en biochemiese profiel was normal, terwyl 'n endoskopiese ondersoek slegs geringe duodenitis toon het. 'n Orale cholesistogram het geen konsentrasie van die kontrasmiddel toon terwyl 'n ultraklankondersoek van die ultrasonografi nie daarin kon slaag om 'n ektopiese galblaas aan te dui nie.

Dit het gelei tot 'n suktentiewe inspuiting van kontrasmiddel in die ductus choledochus. Die ductus choledochus het egter sowat 12 mm wyd voorgekom, maar sonder vullingsdefekte. 'n Choledochus-eksplorasie is hierna uitgevoer maar geen stene is gevind nie. In die lig van die feit dat die pasiënt slegs simptome ondervind het, is hy drastiese verligting van sy simptome ondervind. Tydens dié prosedure is daar geen ektropiese galblaas aangeteken nie.

Gevalbeskrywing


Tydens die laparotomie kon geen galblaas gevind word nie. 'n Operatiewe cholangiogram met behulp van 'n direkte inspuiting van kontrasmiddel in die ductus choledochus kon ook geen galblaas intrahepaties of elders aangeteken nie. Die ductus choledochus het egter sowat 12 mm wyd voorgekom, maar sonder vullingsdefekte. 'n Choledochus-eksplorasie is hier te dui maar geen stene is gevind nie. In die lig van die feit dat die pasiënt slegs simptome ondervind, is hy 'n transduodenale stkteroplastiek hierna as galdreineringsprosedur uitgevoer. Hy is egter geen simptome van die moeheid se gesteig. Tydens dié prosedure het daar geen ektropiese galblaas aangeteken nie.

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