Valuable but neglected technique for the culture of aerobic organisms from cerebrospinal fluid

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Passot (1913) suggested that there was a greater chance of growing an organism from the cerebrospinal fluid if a technique were employed similar to that used in blood culture and a large volume of cerebrospinal fluid added to fluid media rather than a single loop of deposit. Most hospitals and textbooks, however, seem to favour culture of the deposit only.

In this laboratory the results obtained by culturing the deposit of a specimen of cerebrospinal fluid and the whole of the supernatant fluid after centrifuging for five minutes at 3,000 r.p.m. in an M.S.E. centrifuge have been compared.

METHOD

The amount of the specimen allotted for bacteriological study is transferred aseptically into a plugged sterile centrifuge tube and spun down. The supernatant fluid is then transferred by pouring it, aseptically, into a universal container containing about 6 ml. of sterile 0.25% glucose broth. (The deposit is also cultured in glucose broth and on solid media.) The glucose broth from both specimens is incubated for at least 48 hours and subcultures are made onto solid media as necessary.

RESULTS

Cerebrospinal fluid from 150 patients was examined by

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this technique. The following organisms were grown repeatedly from seven patients: Staphylococci coagulase positive in four cases, *Ps. pyocyanea* in two cases, and *C. acnes* in one case. In four of these cases the organism was grown only from the culture of the supernatant fluid and never from the culture of the deposit, namely, staphylococci coagulase positive in three cases and *C. acnes* in one case.

The organism, staphylococcus coagulase positive, in one case, was grown originally from the culture of the deposit in glucose broth and supernatant fluid and then only from the supernatant fluid until eventually it ceased to grow. One organism, *Ps. pyocyanea*, was grown at first from the supernatant fluid only, then from the culture of the deposit in glucose broth, and eventually from the deposit directly on blood agar. This organism was grown from the culture of the supernatant fluid before the cell count in cerebrospinal fluid was increased and before the biochemical results were affected.

The remaining organism, *Ps. pyocyanea*, grew directly from the deposit on blood agar.

Six of the seven cases developed clinical signs of meningitis and three of them died in this hospital. Thus in six out of seven cases the cerebrospinal fluid would have incorrectly been reported as sterile if the supernatant fluid had not been cultured and there would have been a serious delay in the diagnosis of meningitis in five out of these six cases.

It may be concluded, therefore, that culture of a large volume of cerebrospinal fluid is vital for the early diagnosis of meningitis. Occasionally the addition of a large volume of cerebrospinal fluid to the media causes some precipitation which may give the appearance of bacterial growth but this difficulty can easily be overcome by subculturing.

REFERENCE

Passot, R. (1913). *Méningites et États Méningés Aseptiques d'origine Otique*. Thèse, Paris.