Bacteriology of Acute Suppurative Otitis Media

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Acute suppurative otitis media is a malady with which the patients report to General Hospital, not quite infrequently. Though majority of patients seek relief from their family physicians we do get some in the outpatient department of E.N.T. diseases. An opportunity has been taken to study such of the cases very suggestive of acute suppurative otitis media. Bacteriological study and the susceptibility of the organisms isolated to various antibiotics form the basis of this study.

MATERIALS AND METHODS

During the period of 6 months, from October '66 to March 67, 22 patients could be studied. They belonged to different age groups. Though many other patients with acute middle ear infections attended the outpatients, all could not be investigated due to various reasons. However, no conscious selection was made. Precaution was taken to see that exudates were collected from those who had not been administered with any chemotherapeutic agent or an antibiotic. In addition, cases in whom the tympanic membrane was bulging without exhibiting any rupture were chosen for the study.

The external auditory canal was thoroughly cleaned with cotton wool swabs. Then it was completely filled with 4% lignocaine hydrochloride solution and the patient was made to lie down with that ear uppermost for 10 minutes. This helped in reducing the sensitivity of the tympanic membrane. The ear was cleaned again and filled with acetone for 2 minutes. The external canal was now cleaned and dried with sterile swabs. A sterile speculum was introduced for visualisation of the drum. The drum was punctured under sterile conditions at the site of maximum bulge with a 2 c.c. all glass syringe fitted with a lumbar puncture needle and loaded with 1 ml. of distilled water. The contents of middle ear were aspirated into the syringe with
sterile distilled water in the syringe. If the contents of the middle ear were very thick and scanty about 0.3 ml. of the sterile distilled water from the syringe was instilled into middle ear to facilitate easy aspiration. The exudates thus collected were immediately transferred into sterile test tubes of size 2" by 3/8" and sent to the laboratory for bacteriological investigation. With the same needle puncture technique, a broad spectrum was introduced into the middle ear after the completion of the aspiration of the exudate.

24 aural specimens thus received in the department of microbiology were studied as in 2 cases it was a bilateral lesion. The smears of the exudates were studied by Gram’s technique. The specimens received were immediately inoculated into 5 ml. of 1% rabbit blood broth and also streaked on solid media like blood agar, chocolate agar and MacCorkey’s plates. Chocolate agar was incubated in the atmosphere of CO2 at 37°C whereas the other media were incubated aerobically at 37°C. After overnight incubation, smear preparations from blood broth were studied by Gram’s technique and if found to be negative for bacteria the broth was further incubated. Cultures were taken as negative if there was no growth for 7 days. Depending on the nature of the growth relevant solid media were inoculated. The various bacteria from different solid media were identified by their morphological features, cultural characters and further confirmed by biochemical reactions. The identification of pneumococci was done with the help of bile solubility test and inulin fermentation. Serotyping of pneumococci was not carried out. The Streptococcus faecalis was identified by heat resistance test and by its capacity to grow on nutrient agar with pH of 9.6 and with 6.5% NaCl concentration. Staphylococci were considered to be pathogenic based on coagulase test (tube test) and fermentation of mannite.

The isolated pathogens were tested for their susceptibility to pencillin, streptomycin, chloromphenicol and tetracycline by disc diffusion technique. The discs containing the following concentrations were used (Cruickshank, 1960).

- Penicillin 1 Unit
- Streptomycin 10 Micro grams
- Chloromphenical 25 "
- Tetracycline 10 "

The diameter of the inhibitory zone was measured by including the diameter of the disc. If the zone of inhibition was 12 m.m. and more it was considered susceptible and less resistant. (Subba Rao & Naidu, 1961.)

RESULTS

Among 22 patients investigated 8 were children and the rest adults. 14 were males. The age and sex grouping is depicted in table I.

Out of 24 aural specimens, 19 bacteriae were isolated. 7 samples (29.16%) were negative. In two exudates (8.33%) a mixture of organisms was isolated. Pneumococci were the common organisms in both the instances. In one instance it was in combination with Streptococcus faecalis and the other with Klebsiella species. One strain of diphtheroids has been isolated and this is considered to be a nonpathogen (Feingold, et al 1966). The isolated pathogens are listed in the accompanying table II.

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