A COMPARISON OF ENRICHMENT CULTURE MEDIA FOR THE DIAGNOSIS OF PERI-PROSTHETIC JOINT INFECTION

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Introduction

Various broth enrichment culture media have been advocated for the diagnosis of peri-prosthetic infections. We compared our in house method of enrichment in nutrient broth (NB) with a fastidious anaerobic broth (FAB), Robertson’s cooked meat broth (RCM) and a continuous monitoring blood culture system (CMBCS) namely Becton Dickenson Bactec FX.

Results

78 consecutive arthroplasty samples were included in this study. There were no growth in 53 samples and 7 were false positives. 18 samples were considered to be true positives, these comprised Staph epidermidis (10), Staph aureus (4), Enterococcus faecalis (2), Dermabacterium hominis (1), Candida albicans (1).

The sensitivity and specificity of the different media was as follows: nutrient agar 66.6% (41-87) and 91.7% (81-97), FAB 50.0% (26-74) and 96.6% (88-99), RCM 72.2% (46-90) and 98.3% (91-99), and CMBCS 88.2% (63-98) and 100% (94-100), respectively.

Methods

Revision arthroplasty samples were collected into vials of nutrient broth and disrupted with Ballotini glass beads. Samples were aliquoted into FAB, RCM and aerobic and anaerobic blood culture bottles. Broths were incubated at 35°C for a minimum of 5 days and sub-cultured onto blood and chocolate agar for 7 days. Blood culture samples were incubated for 5 days and sub-cultured only if they flagged positive. All isolates were identified by MALDI-ToF.

Conclusion

Our in house method using nutrient broth performed better than FAB and was comparable to RCM. The best results were obtained using the continuous monitoring blood culture system – this should be considered to be the method of choice.