

MICROORGANISMS ISOLATED FROM ASCITES IN VERY LOW-BIRTHWEIGHT INFANTS WITH INTESTINAL PERFORATION

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Aim: The proper use of antibiotics is essential for very low-birth-weight infants (VLBWIs) with intestinal perforation (IP) due to infections such as necrotizing enterocolitis. The estimation of indication for antifungal drugs and vancomycin is especially important. Cultures obtained from the site of infection are useful for ensuring proper use of antibiotics. The aim of this study is to characterize microorganisms isolated from ascites in VLBWIs with IP and to evaluate the timing of detection of each organism, with special focus on *Candida*, *Staphylococcus*, and *Enterococcus*.

Methods: After ethical approval, a retrospective multicenter case-control study was conducted at 11 institutes. We reviewed 77 VLBWIs who underwent laparotomy and ascites culture for IP. Microorganisms isolated from ascitic fluid obtained at surgery. Kruskal-Wallis test with Dunn's multiple comparisons was used for statistical analysis.

Results: Of 77 patients, 50 species of bacteria or fungi were commonly detected in 40 patients. Of 40 culture positive patients, 37 patients had already had enteral feeding. At the genus level, 13 *Staphylococcus*, 9 *Enterococcus*, 9 *Candida*, 8 *Enterobacter*, 5 *Klebsiella*, 2 *Escherichia*, 2 *Pseudomonas*, 1 *Acinetobacter* and 1 *Bacillus* isolates were detected. The median age of detection for *Candida* was 7.0 days. Among the bacteria, the median age of detection was 7.0 days for *Staphylococcus*, 15.0 days for *Enterococcus*, and 14.5 days for genera belonging to the phylum Proteobacteria. *Candida* and *Staphylococcus* were detected significantly earlier than *Enterococcus* and the Proteobacteria (*Candida* vs. *Enterococcus*: $p=0.01$, *Candida* vs. Proteobacteria: $p=0.04$, *Staphylococcus* vs. *Enterococcus*: $p=0.01$, *Staphylococcus* vs. Proteobacteria: $p=0.04$). There was no significant difference between the age of detection of *Candida* and *Staphylococcus*, as well as *Enterococcus* and the Proteobacteria.

Conclusion: *Candida* and *Staphylococcus* were detected at the earliest infant ages. These findings will contribute to planning an effective strategy for proper perioperative antibiotic use.

