Clinical virulence of Propionibacterium species growth in CSF thioglycollate broth cultures

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ABSTRACT

Background: In patients with cerebrospinal fluid (CSF) shunts, Propionibacterium species in the thioglycollate broth may be a true infection or a skin contaminant.

Objectives: We aimed to (1) estimate the relative hazard of shunt externalization for infectious causes after thioglycollate broth only growth of Propionibacterium sp.; (2) explore the clinical course of shunt infection in the presence of thioglycollate broth only cultures; and (3) compare the clinical characteristics of patients with growth in only thioglycollate broth vs. coagulase-negative Staphylococcus (CNS) vs. other organisms.

Methods: We performed a retrospective cohort study via manual chart review of all patients with microorganism growth in only thioglycollate broth only versus CNS from CSF culture at Duke University Clinical Microbiology Laboratory between January 1, 1996 and March 31, 2010. We used Cox models to estimate the relative hazard of infection-related CSF shunt externalization following the first positive broth culture of Propionibacterium, other living contaminants, or CNS.

Results: The cohort included 271 patients with only thioglycollate broth only cultures. Most cultures were drawn for a clinical indication. 112 (30%) patients had skin infections as evidenced by concurrent skin and muscle findings on imaging. Infections were considered clinically related if patients with CNS or other organism growth in only thioglycollate broth only did not undergo shunt externalization any more frequently than patients with skin contaminants. Late events requiring shunt externalization within 2 years were uncommon. Results may simply reflect clinician behavior.

Conclusions: In patients with cerebrospinal fluid (CSF) shunts, thioglycollate broth from CSF culture at Duke University Clinical Microbiology Laboratory between January 1, 1996 and March 31, 2010, patients with only Propionibacterium growth in only thioglycollate broth did not undergo shunt externalization any more frequently than patients with skin contaminants. Late events requiring shunt externalization within 2 years were uncommon. Growth of Propionibacterium in only thioglycollate broth may often be a contaminant without major clinical consequences. However, results may simply reflect clinician behavior.

RESULTS

Table 1. Baseline characteristics of patients with CSF shunts and positive cultures only in thioglycollate broth at Duke University Medical Center, 1996-2010.

| Variable | Compa...