

Journal Article

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Abstract

Objective

Bacterial meningitis is a medical emergency associated with high mortality rates. Cerebrospinal fluid (CSF) culture is the “gold standard” for diagnosis of meningitis and it is important to establish the susceptibility of the causative microorganism to rationalize treatment. The Namibia Standard Treatment Guidelines (STGs) recommends initiation of empirical antibiotic treatment in patients with signs and symptoms of meningitis after taking a CSF sample for culture and sensitivity. The objective of this study was to assess the antimicrobial sensitivity patterns of microorganisms isolated from CSF to antibiotics commonly used in the empirical treatment of suspected bacterial meningitis in Namibia.

Methods

This was a cross-sectional descriptive study of routinely collected antibiotic susceptibility data from the Namibia Institute of Pathology (NIP) database. Results of CSF culture and sensitivity from January 1, 2009 to May 31, 2012, from 33 state hospitals throughout Namibia were analysed.

Results

The most common pathogens isolated were *Streptococcus species*, *Neisseria meningitidis*, *Haemophilus influenzae*, *Staphylococcus*, and *Escherichia coli*. The common isolates from CSF showed high resistance (34.3% –73.5%) to penicillin. Over one third (34.3%) of *Streptococcus* were resistance to penicillin which was higher than 24.8% resistance in the United States. *Meningococci* were susceptible to several antimicrobial agents including penicillin. The sensitivity to cephalosporins remained high for *Streptococcus*, *Neisseria*, *E. coli* and *Haemophilus*. The highest percentage of resistance to cephalosporins was seen among ESBL *K. pneumoniae*, other *Klebsiella* species, and *Staphylococcus*.

Conclusions

The common organisms isolated from CSF were *Streptococcus Pneumoniae*, *Neisseria meningitidis*, *Haemophilus influenzae*, *Staphylococcus*, and *E. coli*. All common organisms isolated from CSF showed high sensitivity to cephalosporins used in the empirical treatment of meningitis. The resistance of the common isolates to penicillin is high. Most ESBL *K. pneumoniae* were isolated from CSF samples drawn from neonates and were found to be resistant to the antibiotics recommended in the Namibia STGs. Based on the above findings, it is recommended to use a combination of aminoglycoside and third-generation cephalosporin to treat non-ESBL *Klebsiella* isolates. Carbapenems (e.g., meropenem) and piperacillin/tazobactam should be considered for treating severely ill patients with suspected ESBL *Klebsiella* infection. Namibia should have a national antimicrobial resistance surveillance system for early detection of antibiotics that may no longer be effective in treating meningitis and other life-threatening infections due to resistance.

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