



Nosocomial meningitis in neurosurgery department | 3 years period



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Background

Nosocomial meningitis (NM) is a complication of neurosurgical invasive procedures such as craniotomy, external or internal ventricular shunt placement, laminectomy, and others. Shunt infections (SI) are major part of nosocomial meningitis. The aim of the study was to evaluate the NM after neurosurgical procedures.

Methods

In this report, NM cases hospitalized neurosurgery department, in a tertiary referral hospital, from January 2004- December 2015 period were retrospectively evaluated.

Results

We described 85 NM cases, 60 (70.5%) were shunt infection (SI) and 25 (29.4%) were nonshunt infection (nSI).

Mean age were 9.9 years in SI (0-53) and 32 years in nSI (9-70). A total 134 microorganism were isolated from NE, 32 were polymicrobial and/or reinfection.

Total 84 Gram-positive (62.7%) and 47 (34.3%) Gram-negative microorganisms, and 3 fungus were isolated from cerebrospinal fluid (CSF) cultures.

Most frequent causative pathogens in NM were methicillin resistant coagulase negative staphylococci (MRCNS) (n=57, 42.5%), Acinetobacter spp. (n=17, 12.6%), methicillin sensitive coagulase negative staphylococci (MSCNS) (n=12, 8.9%) (Table 1).

Overall mortality rates of 85 case were 22.3% (n=19), 18.3% in SI (n=11) and 32% in nSI (n=8). In fatal cases polymicrobial infection and/or reinfection rate was 63.1% (12/19).

Conclusion

NM was an important complication after invasive neurosurgical procedures. Most frequent causative agents were coagulase negative staphylococci and Acinetobacter spp.

Mortality rates were high especially in polymicrobial infection or reinfection, and in MDR Gram-negative infections.

Infection control prevention should be strictly applied for MDR bacteria. To decreasing NE new techniques such as antibiotic coated catheter should be developed.

Table 1. Causative pathogens in nosocomial meningitis

| Gram-Positive Microorganism | n (%) | Gram-Negative Microorganism | n (%) | Fungus | n (%) |
|-----------------------------|-----------|-----------------------------|----------|---------------|---------|
| MRKNS | 57 (42.5) | Acinetobacter spp. | 17(12.6) | Candida spp | 3 (2.2) |
| MSKNS | 12 (8.9) | Enterobacter | 11 (8.2) | | |
| MRSA | 3 (2.2) | P.aeruginosa | 8 (6.0) | | |
| MSSA | 6 (4.4) | E.coli | 5 (3.7) | Polymicrobial | 32 |
| VSE | 4 (2.9) | Citrobacter | 3 (2.2) | | |
| VRE | 2 (1.5) | Klebsiella spp. | 3 (2.2) | | |
| Total | 84 (62.7) | | 47(35.0) | | 134 |

References

1. Kim HB. Nosocomial Meningitis: Moving beyond Description to Prevention Korean J Intern Med. 2012 Jun;27(2):154-155.
2. Bardak-Ozcem S, Sipahi OR. An updated approach to healthcare-associated meningitis. Expert Rev Anti Infect Ther. 2014;12(3)