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SCIENTIFIC ARTICLE

Frequency of colonization and isolated bacteria from the tip of epidural catheter implanted for postoperative analgesia☆

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KEYWORDS
Epidural anesthesia;
Infection;
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Abstract
Background and objective: The increased use of epidural analgesia with catheter leads to the need to demonstrate the safety of this method and know the incidence of catheter colonization, inserted postoperatively for epidural analgesia, and the bacteria responsible for this colonization.
Methods: From November 2011 to April 2012, patients electively operated and maintained under epidural catheter for postoperative analgesia were evaluated. The catheter tip was collected for semiquantitative and qualitative microbiological analysis.
Results: Of 68 cultured catheters, six tips (8.8%) had positive cultures. No patient had superficial or deep infection. The mean duration of catheter use was 43.45 h (18–118) ($p = 0.0894$). The type of surgery (contaminated or uncontaminated), physical status of patients, and surgical time showed no relation with the colonization of catheters. Microorganisms isolated from the catheter tip were *Staphylococcus aureus*, *Pseudomonas aeruginosa* and *Sphingomonas paucimobilis*.

☆ Study conducted at Hospital de Clínicas da Universidade Federal de Uberlândia, Uberlândia, MG, Brazil.

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Conclusion: Postoperative epidural catheter analgesia, under these study conditions, was found to be low risk for bacterial colonization in patients at surgical wards.

PALAVRAS-CHAVE
Anestesia epidural;
Infecção;
Bactérias

Frequência de colonização e bactérias isoladas de ponta de cateter de peridural implantado para analgesia pós-operatória

Resumo
Objetivos: O aumento do uso de analgesia pela via peridural com uso de cateteres leva à necessidade de se demonstrar a segurança do método. O presente estudo teve como objetivo conhecer a incidência de colonização de cateteres inseridos para analgesia peridural no pós-operatório e as bactérias responsáveis por estas colonizações.
Métodos: No período de novembro de 2011 a abril de 2012 foram avaliados pacientes operados eletivamente mantidos sob analgesia por cateter peridural no pós-operatório. A ponta do cateter foi coletada para análise microbiológica semi-quantitativa e qualitativa.
Resultados: Seis (8,8%) pontas dos 68 cateteres cultivados apresentaram culturas positivas. Nenhum paciente apresentou infecção superficial ou profunda. O tempo médio de permanência do cateter foi de 43,45 horas (18-118 horas) (p = 0,0894). O tipo de cirurgia (contaminada ou não contaminada), estado físico dos pacientes e tempo cirúrgico não mostraram relação com a colonização dos cateteres. Os micro-organismos isolados da ponta de cateter foram *Staphylococcus aureus, Pseudomonas aeruginosa* e *Sphingomonas paucimobilis*.
Conclusão: Conclui-se que, a analgesia por cateter peridural no pós-operatório, nas condições do presente estudo, revelou-se procedimento com baixo risco de colonização bacteriana em pacientes de enfermarias cirúrgicas.

Introduction

Epidural anesthesia has been used mainly not only for pain relief, for hours or a few days in surgical patients, trauma victims, and those admitted in intensive care units, but also for longer periods in patients with chronic pain, such as those undergoing cancer treatment.[1,2]

Evidence shows that association of general and epidural analgesia facilitates early recovery and improves patient outcome by reducing the incidence of thromboembolic, pulmonary, and gastrointestinal events.[1,3–5]

Besides the advantages mentioned, the complications associated with epidural catheters include total spinal anesthesia; post-dural puncture headache; spinal cord and nerve root trauma; hematoma; and infections such as epidural abscesses, meningitis, and superficial skin infection.[1,6,7] Epidural catheter colonization is defined as the growth of at least one microorganism in quantitative culture regardless of the number of units forming colony without local inflammation or infection in the spinal space.[7]

Studies of the use of epidural catheter for analgesia have shown rates of colonization or infection of 0–28.8%.[6,8–10] The incidence of infection associated with epidural catheter ranges from 0.06% to 5.3% in studies with surgical patients and the rate of site-specific infections (meningitis, paraspinal and epidural abscess) ranges from 0 to 0.7%.[1,6,10,11]

There are several mechanisms by which epidural catheter causes infection. First, infection may occur by contamination of the catheter emergence site or its lumen and spreads along its duct. The second mechanism is by organisms that are introduced during puncture or catheter insertion. Infection may occur via blood from blood stream or from a distant focal infection. A fourth mechanism described is intraluminal via a contaminated infuser.[1,12]

For intravascular catheters, Maki et al. reported that catheter growth of more than 15 colonies correlates with increased risk of infection.[13] However, the quantitative value of the results of epidural catheter cultures was not determined.[1]

The vast majority of epidural catheter infections are caused by *Staphylococcus aureus* (57–93% of cases), *Streptococcus* spp. (18%), and a variety of Gram-negative bacilli (13%), but mycobacteria, fungi, and parasites may also be found in the abscesses. The microbiological spectrum of infection depends on the population studied.[12,14–18]

The microorganisms most frequently isolated at the tip and at the site of epidural catheter insertion are: coagulase-negative *Staphylococcus*, especially *Staphylococcus epidermidis*, *S. aureus*, and *Pseudomonas aeruginosa*.[14–18]