

# **Role of the pathogenic oral flora in postoperative pneumonia in neurosurgical patients**

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## **SUMMARY**

Bacterial bronchopneumonia is one of the most common infectious diseases in adults, with a well-known high morbidity and mortality, especially in old patients. Administration of cephalosporins to patients as prophylaxis for high-risk surgical procedures at the time of induction of general anaesthesia is routinely done in many institutes and they are also often chosen for the therapy of nosocomial bronchopneumonia.

In the present study, the efficacy of pre-operative cephalosporin prophylaxis in controlling the growth of pathogenic oral flora in patients undergoing neurosurgical procedures was investigated and the effectiveness of the applied antibiotic therapy in the sputum in case of postoperative pneumonia was also determined.

Unfortunately, the concentrations of every cephalosporin tested was very low in the saliva; cefazolin, cefuroxime, and cefamandole did not reach the MIC values of the majority of the bacteria, and therefore had only a very moderate effect on the oral flora, and thus the potential prevention of postoperative pneumonia.

The level of cephalosporins used for the therapy of purulent bronchopneumonia in serum corresponded to the reported results in the literature, but only the mean concentration of ceftriaxone exceeded the 0.5 mg/l detectability level in the sputum while cefuroxime, cefamandole, ceftazidime and cefepime remained under this level. Furthermore, the mean concentration of every investigated antibiotics did not reach the MIC values of the bacteria isolated from the purulent bronchial secretion.

Based on our observations in high risk patients the completion of prophylactic cephalosporins with supplementary local antiseptic drugs for reduction the pathogen oral bacteria in the saliva can be suggested.

In case of purulent bronchopneumonia, the low penetration rate of the investigated cephalosporins into the sputum does not ensure an appropriate drug concentration for elimination the pathogen bacteria, so the role of expectorant physiotherapeutical technics in treating pneumonia seem to be reevaluated.

In summary, in high risk patients - such as older people, presence of multiple serious diseases or possibility of oncoming deteriorated level of consciousness - decrease of pathogen oral flora by preoperative dental treatment and use of oral antiseptic pills or solutions would be expedient.

**Key words:** oral flora, postoperative pneumonia, cephalosporins