

Inflammation and clinical immunology

Infection of *Klebsiella pneumoniae* ESBL among hospitalized patients

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Introduction: *Klebsiella* spp., members of the Enterobacteriaceae family, are one of the most important hospital pathogens. An important problem is multidrug-resistance of these pathogens, in particular through the production of beta-lactamases with extended-spectrum type of ESBL. Their appearance is caused by improper use and the abuse of antibiotics. The aim of the study was to evaluate hospital infections with *K. pneumoniae* ESBL (+) specifying the location of changes, risk factors and patient prognosis.

Material and methods: It is a retrospective type of study. All patients, hospitalized in the Czerniakowski Hospital in Warsaw during the period 01 January - 31 March 2013 with an infection of *Klebsiella pneumoniae* ESBL (+) aetiology, were analysed. The study included 36 patients (19 women and 17 men), aged 39 to 93 years. In the study group elderly people dominated (75% >65 years). Chi2 test was used for statistical analysis with p values below 0.05 considered significant. All statistical calculations were performed using the Medcalc 4,16 version.

Results: From 1st January to 31st March 2013 1619 patients were admitted to the Czerniakowski Hospital in Warsaw. Infection with *K. pneumoniae* ESBL (+) was found in 2.2% of them. Twenty of these patients died, representing 14% of all deaths at this time. Among the dead were 13 women and 7 men. Infections with *K. pneumoniae* ESBL (+) occurred in 18 patients in the internal diseases department, 3 on the neurological ward, 3 in intensive care, 1 on the surgical ward, 1 in the orthopedic department and in 10 patients transferred between wards. Most often the bacteria were isolated from urine (26 cases), less often from bronchial secretions (6 cases) and wound swabs (2 cases). In two cases, the bacteria were isolated from urine and sputum, and three cases showed the presence of bacteria also in the blood. A correlation was found between respiratory infections caused by *Klebsiella pneumoniae* ESBL (+) in men and the number of deaths ($p = 0.03$). A statistical relationship was also found between the deaths and the use of a urinary catheters ($p = 0.019$) or catheters placed in a different location ($p = 0.045$).

Conclusions: Infections with *Klebsiella pneumoniae* ESBL (+) are associated with an over 50% mortality. These infections have occurred primarily on the ward of internal diseases, which is associated with the specificity of these patients in Poland. Deaths in these cases were related to age, as well as catheters placed in the bladder or other locations.