ABSTRACT

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Title: Resistance to antibiotics in Staphylococcus aureus

Bachelor thesis

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Field of study: Medical Laboratory

Background: The bachelor thesis aims at dealing with Staphylococcus aureus, describing its basic properties, laboratory diagnostics, antigenic structure and the diseases what it causes. Describe types and mechanisms of resistance, antibiotic therapy including mechanisms of antibiotic action. More attention is paid to the strains of MRSA (Methicillin resistant Staphylococcus aureus), because this is one of the biggest problems associated with resistance.

Main findings: In the period before to the discovery of antibiotics, invasive infections caused by S. aureus were mostly fatal. With the introduction of antibiotics into practice, the problem of resistance has multiplied. The occurrence of MRSA was the largest in 2009 at - 14.6% in the Czech Republic. In 2014, the occurrence of MRSA was 13%, and 2 years later, there was again a slight increase - 13.9% in 2016 (ECDC, 2018). The selection of antibiotic and the method of antibiotic treatment of infections depend on the clinical condition of the patient, the agent of the disease including its sensitivity, the underlying disease and the properties of the antibiotic.

Conclusions: Effective prevention of the emergence and spread of MRSA or other resistant strains requires strict adherence to basic hygienic - epidemiological regimes and the limitation of excessive use of antibiotics. In addition to existing antibiotic therapy, there are several other options to combat resistance such as vaccines, new antibiotic intervention sites, chemical modification of existing products, use of forgotten natural compounds and their transformation.

Keywords: Staphylococcus aureus, MRSA, antibiotics, resistance