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Evaluation of Patients with Asymptomatic Nares Colonization with Methicillin-Resistant Staphylococcus Aureus at Hospital Admission

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Introduction

Asymptomatic colonization with Methicillin-Resistant Staphylococcus Aurous (MRSA) is a risk factor for MRSA that is a significant nosocomial pathogen of nosocomial infection. We evaluated the effect of asymptomatic nares MRSA colonization on the improvement of MRSA infection. Volunteer persons who admitted to the otorhinolaryngology department of Ahi Evran university hospital were included this study. Nares samples were obtained for culture at admission. Of the 658 patients who had cultures of nares samples performed at admission, 13.2% were colonized with methicillin resistance was detected in 11.4% of patients with aureus colonization at admission. MRSA colonization of nares improves the risk for MRSA infection. Detecting MRSA colonization before hospitalization of patients could helpful to reduce the risk for subsequent MRSA infection.

Staphylococcus aureus and its resistant form of Methicillin-Resistant Staphylococcus Aureus (MRSA) are the most prevalent nosocomial pathogens that increase morbidity and mortality in long hospitalization and cause increasing in hospital stay and costs. Staphylococci may be present as normal flora members in skin and mucous membranes, but may cause serious infections. About 20% of the populations are continuously nasal aureus carriers, while about 20% never colonize and the remaining 60% become carriers intermittently. Factors such as chronic diseases and hospitalization increase the nasal aureus carriage rate. Aureus is endemic in many hospitals in our country and in lots of other countries. Nosocomial infections due to aureus are becoming an increasingly important problem due to the increased resistance of methicillin and glycol peptide to this strain. Important feature of aureus is property of biofilm formation besides many disease-causing mechanisms. Biofilm formation begins with the attachment of bacteria to the surface via the extracellular matrix slime layer and is an important feature in terms of infection development. The ability of multiplying of bacteria within the biofilm structure leads to resistance to both antimicrobials and host defense. They lead to serious health problems, especially in catheterized patients. Methicillin resistance can alter the biofilm phenotype and cause serious clinical problems. Carriers should be treated to control the MRSA epidemic and prevent recurrent infections, especially in health care facilities. For this purpose, administration of nasal mupirocin (psodomonic acid) three times a day for five days provides eradication. However, due to inappropriate use of mupirocin, resistance has started to develop in aureus strains in recent years.

Clinical Investigations

A total of 658 nasal swab samples from volunteer patients who were admitted to the department of otolaryngology of Ahi Evran University Training and Research Hospital between June 2015 and December 2015 were included in this study. Informed consent was obtained from all subjects before admission to the study. This study was approved by the Ethics Committee of Clinical Investigations of Turgut Özal University in accordance with Helsinki Declaration and numbered 99950669 / 32-9.01.2015. Nasal swab specimens were delivered to the laboratory within the appropriate conditions. Swab specimens were cultured on medium with mannitol, the selective medium for aureus isolates. Aureus was identified by coagulase test in yellow colonies. Methicillin resistance was tested according to the European Committee on Antimicrobial Susceptibility Testing (EUCAST) recommendations using cefoxitin (30 µg) disc. MecA gene presence was confirmed by Polymerase Chain Reaction (PCR) method in isolates that were positive for methicillin resistance.