Letter to Editor/Carta ao Editor

Methicillin- and vancomycin-resistant *Staphylococcus aureus* colonization

Colonização por *Staphylococcus aureus* resistentes à oxacilina e à vancomicina

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Dear Editor:

Goud et al.[1], in their very interesting article regarding the prevalence of *Staphylococcus aureus* in their community, have stated that "the anterior nares are the most common site for colonization". Recent data suggest that the oropharynx could be more frequently colonized than the anterior nares by *S. aureus* [2–4]. Furthermore, even in some populations where nasal colonization is more common than oropharyngeal colonization, the use of a throat swab would significantly increase the rate of detection of carriers[5].

In addition, another matter of discussion would be the chosen screening method for vancomycin resistance. The authors used disk diffusion, which is not considered to be accurate or reliable enough for the detection of the decreased susceptibility of *S. aureus* to this antimicrobial agent. It is of paramount importance to remember that, according to the current guidelines issued by the Clinical and Laboratory Standards Institute (formerly the National Committee for Clinical Laboratory Standards), minimum inhibitory concentration tests should be performed to determine the susceptibility of all staphylococcal isolates to vancomycin. Although the disk diffusion test can accurately detect *S. aureus* containing *vanA* (vancomycin-resistant isolates), it cannot differentiate vancomycin-susceptible isolates from vancomycin-intermediate isolates[6].

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Article/Artigo

Community prevalence of methicillin and vancomycin resistant *Staphylococcus aureus* in and around Bangalore, southern India

Prevalência de *Staphylococcus aureus* resistente à meticilina e à vancomicina em comunidade no entorno de Bangalore, Índia do Sul

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ABSTRACT

Introduction: *Staphylococcus aureus* is a known colonizer in humans and has been implicated in community acquired soft tissue infections. However emergence of methicillin resistant *S. aureus* (MRSA) has aroused great concern worldwide. This study aimed to determine the prevalence of MRSA in the community of Bangalore, southern India. **Methods:** Swabs were collected from anterior nares, forearm, dorsum and palm of the hands of 1,000 healthy individuals residing in and around Bangalore, belonging to different socioeconomic strata and age groups. **Results:** Analysis verified that 22.5% and 16.6% of the individuals presented *Staphylococcus aureus* and MRSA, respectively, at any of the three sites. Vancomycin resistance was observed in 1.4% of the *S. aureus* isolates, which was confirmed by detection of the *vanA* gene. It was interesting to note that 58.8% of the children in the age group 1-5 years-old presented MRSA, the highest percentage compared to other age groups of < 1 (44.4%) year-old, 5-20 (21.7%) years-old, > 40 (11%) years-old and 20-40 (9.9%) years-old. Among the population of various socioeconomic strata, maximum MRSA colonization was observed among doctors (22.2%), followed by upper economic class (18.8%), lower economic class (17.7%), apparently healthy hospital in-patients (16.5%), nurses (16%) and middle economic class (12.5%). Most of the MRSA isolates were capsular polysaccharide antigen type 8 (57.1%). **Conclusions:** There is a need for continuous surveillance and monitoring of the presence of MRSA in the community and a clearer understanding of the dynamics of the spread of MRSA will assist in controlling its dissemination.

Keywords: *Staphylococcus aureus*. Methicillin resistance. Vancomycin resistance. Healthy population. Colonization.

RESUMO

Introdução: O *Staphylococcus aureus* é conhecido por ser um colonizador em humanos sendo implicado em infecções comunitárias dos tecidos moles. Contudo, a resistência à meticilina e emergência de *S. aureus* meticilina resistentes (MRSA) têm despertado preocupação em todo o mundo. O presente estudo visa encontrar a prevalência de MRSA na comunidade de Bangalore, sul da Índia. **Métodos:** *Suabes* foram coletados de narinas anteriores, antebraço e dorso da palma de 1.000 indivíduos saudáveis, residentes em Bangalore e nas proximidades, pertencentes a diferentes estratos socioeconômicos e faixas etárias. **Resultados:** Observou-se que 22,5% e 16,6% dos indivíduos foram abrigar *Staphylococcus aureus* e MRSA, respectivamente, em qualquer um dos três locais. Dos *S. aureus* isolados, 1,4% também foram resistentes à vancomicina, o que foi confirmado pela detecção do gene vanA. Foi interessante notar que 58,8% das crianças na faixa etária de 1-5 anos foram abrigar MRSA, o mais elevado em comparação com outros grupos etários de < 1 (44,4%) ano, 50-20 (21,7%) anos, > 40 (11%) anos e 20-40 (9,9%) anos. Entre a população de diferentes estratos socioeconômicos, a colonização de MRSA máxima foi observada entre os médicos (22,2%), seguida pela classe econômica superior (18,8%), classe baixa (17,7%), pacientes aparentemente saudáveis (16,5%), enfermeiros (16%) e classe econômica média (12,5%). A maioria dos MRSA isolados eram do tipo polissacarídeo capsular antígeno 8 (57,1%). **Conclusões:** Há uma necessidade de vigilância e monitorização contínua da presença de MRSA na comunidade, bem como uma melhor compreensão da dinâmica de propagação de MRSA pode ajudar no controle da disseminação.

Palavras-chaves: *Staphylococcus aureus*. Resistência à meticilina. Resistência à vancomicina. População saudável. Colonização.

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INTRODUCTION

Staphylococcus aureus is ubiquitous in nature and a known colonizer in humans. Community acquired soft tissue infections due to *S. aureus* is quite common[1]. Recently, community acquired *S. aureus* has raised concerns due to increasing methicillin resistance. Methicillin resistant *Staphylococcus aureus* (MRSA) infections do not respond to beta-lactam antibiotics and vancomycin is the drug of choice[2-4]. MRSA has been implicated in both community acquired and hospital acquired infections and many of the clinical infections arise from the spread from healthy carriers. The anterior nares are the most common site for colonization, due to moist squamous epithelium and ventilation, and are also responsible for dissemination in the community. Even healthy individuals carrying MRSA present a small risk of contracting an invasive infection.

Thus, it is imperative to determine the prevalence of MRSA as colonizers in the community, as well as presence of vancomycin resistance among them.

METHODS

In between april 2003 to december 2007, 1000 individuals (M:F=3:2) of various Socio-economic status based on the monthly per capita income (MPCI) in Rs. namely upper economic class (MPCI > Rs. 20000) (n=324), middle economic class (MPCI Rs. 5,000-20,000) (n=233), lower economic class (MPCI< Rs. 5,000) (n=181), doctors (n = 27), nurses (n = 144), apparently healthy hospital in-patients (n = 91), belonging to the age groups (< 1 year-old [n = 9], 1-5 years-old [n=24], 5-20 years-old [n = 434]; 20-40 years-old [n = 424] and > 40 years-old [n = 109]), who were not on any antibiotic therapy and residing in the City of Bangalore and the adjacent Kolar district were recruited. Following free informed consent, swabs were collected from the anterior nares for resident flora and from the forearm, dorsum and palm of the hands for transient flora from 1,000 individuals. Transport swabs (Himedia, India) were used for sample collection and transportation to the

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Resposta dos autores: Colonização por *Staphylococcus aureus* resistentes à oxacilina e à vancomicina

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Dear Editor:

We are thankful to Mimica MJ for his letter[1] and showing interest in our study[2]. It is very truely pointed out by Mimica MJ that recent studies suggest oropharynx to be a more frequently colonised site by *Staphylococcus aureus* than anterior nares[1]. However our study was conducted in the period of 2003-2007, and during the initiation of the study anterior nares was considered to be the most common site for *Staphylococcus aureus* colonisation. Previous studies have also shown strong association between nasal carriage of *Staphylococcus aureus* with systemic infections[3,4].

Mimica MJ has also raised concern regarding the screening method for vancomycin chosen. We agree that the disc diffusion method used may not reliably detect vancomycin resistance and often mis-interprets intermediately susceptible Staphylococcus as fully susceptible[5,6]. Current CLSI guidelines suggest determination of Minimum Inhibitory Concentration (MIC) by broth or agar dilution methods as the gold standard[7]. However in resource-constrained settings and in a routine diagnostic laboratory performing MIC may not be feasible. Similarly we also could not perform MIC for vancomycin and agreeably could not differentiate between vancomycin intermediate with vancomycin resistant *Staphylococcus aureus* strains. Moreover the study was conducted without any external funding source. However we detected the presence of *vanA* gene in the *Staphylococcus aureus* showing vancomycin resistance by disc diffusion, which is characterized by high-level vancomycin resistance[8].

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