Preliminary study of community-acquired Staphylococcus aureus infection in Manaus Hospital, Amazonia Region, Brazil

Estudo preliminar das infeccções por Staphylococcus aureus na comunidade de um Hospital em Manaus, Região do Amazonas, Brasil

Jesus M. Egido¹ and Marcus L. Barros¹

Abstract Methicillin resistant Staphylococcus aureus is considered a public health problem with a strong potential for dissemination and high rates of morbidity and mortality. In this study we describe bacteriological and epidemiological characteristics of Staphylococcus aureus in Manaus (Amazon region). During the one-year study period (2000-2001), sixteen cases of acute pyogenic multiple abscess were evaluated. Community-acquired S. aureus was identified as causative agent in 10 (62.5%) patients. The strains tested with antimicrobials by discs diffusion method, exhibited a high rate of sensitivity to cephalexin (100%), erythromycin (90%). Oxacillin-susceptible Staphylococcus aureus was 90%. No isolate was resistant to Vancomycin. To our knowledge, no series of community-acquired Staphylococcus aureus in Manaus hospital has been published. Our partial results showed a high rate of antimicrobial sensitivity among community-acquired Staphylococcus aureus in the hospital of Tropical Medicine Institute of Manaus, Amazon Region.

Key-words: Community-acquired Staphylococcus aureus. Methicillin resistant. Manaus hospital.

Resumo O Staphylococcus aureus resistente a meticilina é considerado como um problema na saúde publica por seu grande potencial de disseminação e altas porcentagens de morbidade e mortalidade. No estudo descrevemos as características bacteriológicas e epidemiológicas do Staphylococcus aureus na cidade de Manaus. No período de um ano (2000-2001) avaliou-se dezesseis casos de abscessos piogênicos múltiplos. Em 10 (62.5%) doentes o agente causal foi identificado como Staphylococcus aureus adquirido na comunidade. O estudo das bacterias isoladas frente aos diferentes antimicrobianos, seguindo o método de difusão em disco, mostrou boa sensibilidade a cefalexina (100%) e eritromicina (90%). Noventa porcento dos Staphylococcus aureus isolados foram sensíveis ao oxacilina. Nenhum dos isolados mostrou ser resistente a Vancomicina. Não temos informações sobre publicações dos Staphylococcus aureus adquiridos na comunidade em hospitais de Manaus. Nossos resultados parciais mostram uma alta sensibilidade dos Staphylococcus aureus adquiridos na comunidade aos antimicrobianos, em pacientes internados no Instituto de Medicina Tropical do Manaus, na Região da Amazônia brasileira.


Oxacillin-resistant Staphylococcus aureus (ORSA) infection and vancomycin-resistant Staphylococcus aureus (VRSA) infection are an important cause of hospital morbidity and mortality. We report sixteen isolations of Gram positives rods of patients who showed clinical symptomatology of infections and received hospital treatment. The bacteriological isolates were identified. We found ten isolations of Staphylococcus aureus. These strains were tested against 12 different antimicrobial agents by standardized discs diffusion. They showed highest rates of sensitivity to cephalaxin, erythromycin and oxacillin. The sixty percent of patients with Staphylococcus aureus infection, described in this report, were initially treated empirically with oxacillin. All patients recovered completely.

1. Clínica de Infectologia Médica da Fundação de Medicina Tropical do Amazonas, Manaus, AM, Brasil.

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Samples were taken by aseptic needle abscess aspiration in order to avoid bacteriological contamination. In vitro susceptibility testing was performed by the Kirby and Bauer standardized disc diffusion method as described by the National Committee for Clinical Laboratory Standards (NCCLS). We used bacteriological probes to identify the etiologic agents. Specific Methicillin sensitivity test was not performed.

Etiologic agents were identified as *Staphylococcus aureus* in 10 (62.5%) cases, *Staphylococcus epidermidis* 4 (25%) and *Streptococcus sp* 2 (12.5%). The age range was one year to 49 years (mean 23 years). Sex distribution frequency was 56.3% for men and 43.8% for women.

The distribution of the *Staphylococcus aureus* infection isolates, were mainly leg abscesses (40%). Multiple body abscesses were found in 30% of cases.

In a review of medical records of Methicillin resistant *Staphylococcus aureus* (MRSA) in community isolates we found a different prevalence. Alghaithy and cols² in Saudi Arabia reported a 25.4% (299/76) MRSA in community health isolates and 26.1% among healthy hospital??Não faz sentido, talvez deve ser "among isolates from hospitals". In New Zealand, Gosbell and cols⁴ found a 29% (122/36) MRSA in community-acquired isolates. Akiyama and cols¹ in Japan found a 27% (130/35) MRSA in strains from skin clinics. In USA, Groom and cols⁵ in an American Indian community found 55% (112/206) MRSA in community-acquired isolates. Akiyama and cols¹ in Japan found a 27% (130/35) MRSA in strains from skin clinics. In USA, Groom and cols⁵ in an American Indian community found 55% (112/206) MRSA in community-acquired isolates.

Brazilian data showed a high prevalence of MRSA. In Rio de Janeiro, Loureiro and cols² found a 47.8% (90/43) MRSA isolated from nasal swabs of newborns. In other sources of *Staphylococcus aureus* infection, in São Paulo, Costa and cols¹ showed, in strain test by standardized disc diffusion method, that 84.4% were resistant to ampicillin and penicillin and a high sensitivity to cephalothin (84.4%) and gentamicin (80%) in strains isolated from mammary parenchyma.

The antimicrobial agents that showed the highest in vitro activity were cephalexin (100%), erythromycin (90%), oxacillin (90%), gentamicin (90%) and ceftriaxone (85%). Intermediate antimicrobial activity was demonstrated by clindamycin (75%) and cefoxitin (70%) and low antimicrobial activity by ampicillin (90%), penicillin (30%), trimethoprim-sulfamethoxazole (30%) and tetracycline (25%). All isolates were vancomycin-susceptible. All sixty percent of staphylococcal infections received initial empirical oxacillin treatment.

Our results showed a high rate of antimicrobial sensitive to the first generation of cephalosporins (cephalexin) and macrolides (erythromycin) and low rates to penicillins (penicillin, ampicillin). Only one strain was ORSA and no isolate presented VRSA. Normally, in Manaus area, the diagnosis of clinical staphylococci infections is very common. Bacteriological probes are expensive and slow. Consequently, such cases are treated empirically with oxacillin.

In this preliminary study, we found a high rates of antimicrobial sensitivity in *Staphylococcus aureus* community-acquired isolates compared with other reports. We propose that empirical antimicrobial treatment for these patients should be carefully designed in order not to promote antimicrobial resistance. Cephalosporins could be the first choice in the treatment of clinical or community staphylococcal infection in Manaus hospital. Further studies and laboratory tests should be performed.

REFERENCES


