Oxacillin resistant staphylococcus aureus among HIV infected and non-infected patients in Kenya

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The emerging and re-emerging multi-drug resistant bacterial isolates to the commonly used antibiotics has continued to increase and pose a global challenge in management and control of infectious diseases, especially with the advent of HIV and AIDS. Infections due to methicillin resistant S. aureus present a considerable dilemma to clinicians, since therapeutic options are limited and sub-optimal dosing contributes to heightened mortality and increased length of hospital stay particularly among the HIV infected patients. The objective of the study was to assess the prevalence and relative risk of MRSA infections in HIV infected patients with a view to improving on healthcare management strategies of HIV patients with staphylococcal infections. This was an analytical, cross sectional study carried out on both HIV infected and non-infected patients suspected of staphylococcal infections from four health institutions in Nairobi and Busia Districts, Kenya. Microbiological cultures were performed on blood agar and manitol. Identification of Staphylococcus aureus isolates was done by coagulase and API and MRSA by both disk diffusion and MIC on oxacillin and cefotaxime. MecA gene and its coded PBP 2’ was determined using PCR and monoclonal latex agglutination tests. The MIC of oxacillin, cefotaxime, vancomycin, amoxicillin clavulanic acid, sulphamethoxazole trimethoprim, erythromycin, chloramphenicol, tetracycline and gentamycin were performed as per the NCCLS 2003. ATCC S. aureus 25923, 29213 and 3359, E. coli 25922, P. aeruginosa 27853, E. faecalis 29212 were used as quality control strains. Analysis of variance was done using chi square. A total of 436 patients suspected of staphylococcal infections were recruited and sampled between 2006 and 2007 with 220 and 216 HIV-infected and non-infected patients, respectively. The prevalence of MRSA was 26.9% and varied among the four hospital based institutions studied. The study showed a higher isolation rate and a significant difference in the prevalence of staphylococcal infections in HIV infected patients compared to the non-infected patients (odds ratio: 2.081, 95% CI 1.347 - 3215, P < 0.001), while MRSA (odds ratio: 2.174, 95% CI, 0.999-4.732, P=0.046). The isolates from HIV non-infected patients were highly sensitive (100%) to vancomycin while the HIV-infected individuals had 6.8% of the MRSA isolates exhibiting vancomycin intermediate resistance (MIC > 8p,g/ml). Up to 19.5% S. aureus strains were resistant to oxacillin along with gentamicin, tetracycline, erythromycin, and sulphamethoxazole/trimethoprim. This study shows that HW is a predisposing factor to staphylococcal infections and that there is no statistical significance in the prevalence of MRSA and the antimicrobial susceptibility profile among the HIV infected and non-infected patients. This raises the concern that treatment with Rlactam antimicrobials may no longer be relied on as the sole empiric therapy for several ill HIV patients whose infections may be staphylococcal in origin. Molecular epidemiology of S. aureus in understanding new and emerging trends should be continually carried out.