INTRODUCTION

Although in the past most Staphylococcus aureus infections have been nosocomial, the past few years have witnessed widespread emergence of community-acquired strains many of which produce Panton-Valentine leukocidin (PVL) and cause serious and life-threatening infections. Most community-acquired staphylococcal infections are multi-drug resistant (MRSA) and quinolone-resistant, nosocomially-acquired MRSA strains are often multi-resistant. Resistance to available antibiotics such as glycopeptides, levofloxacin, linezolid, gentamicin, tigecycline is the rule and not the exception in recent MRSA strains (especially those acquired nosocomially) but also occurs amongst methicillin-resistant strains (1, 12-14).

Since the first description of heterogeneously vancomycin intermediate (HVA) and vancomycin intermediate S. aureus (VAI) strains (VAI) in Japan, these organisms have been reported all over the world. Recent lowering by the Clinical Laboratory Standards Institute (CLSI, formerly NCCLS) of the vancomycin susceptibility breakpoint from ≥4.0 µg/ml to 2 µg/ml (9) will surely lead to a much wider appreciation of the clinical importance of these strains. In 2003, the first report of vancomycin-resistant S. aureus (VRA) producing VPL occurred; to date, seven VRA strains have been reported (1, 16, 17, M. Rybak, personal communication). It seems clear that the widespread use of vancomycin or teicoplanin in the community and hospital settings produces the selective pressure for VRA and VAI strains (16, 17) in most cases, prior glycopeptide use has been found in individual patients. The further spread of virulent community-acquired S. aureus strains will only exacerbate this problem. There is therefore a need for new antistaphylococcal agents with different mechanisms of action.

101 methicillin-susceptible and 201 methicillin-resistant Staphylococcus aureus were studied. Amongst MRSA strains, 13 were community-acquired and 73 produced PVL. Panton-Valentine leukocidin (PVL) is a cytotoxin that causes leukocyte destruction and tissue necrosis. PVL was identified by PCR. (18)

The MRSA strains included 33 VISA and 25 VISA strains (including a recently isolated VISA from a patient at Hershey Medical Center, which developed the VISA phenotype while the patient was on vancomycin therapy (12), and the first 3 VRSA strains described (from Michigan, Pennsylvania and New York).

RESULTS

FIGURE 1

FIGURE 2

FIGURE 3

FIGURE 4

FIGURE 5

FIGURE 6

FIGURE 7

FIGURE 8

FIGURE 9

REFERENCES


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