

Linezolid-resistant Staphylococcus over 5 years (2009-2013)

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Objective

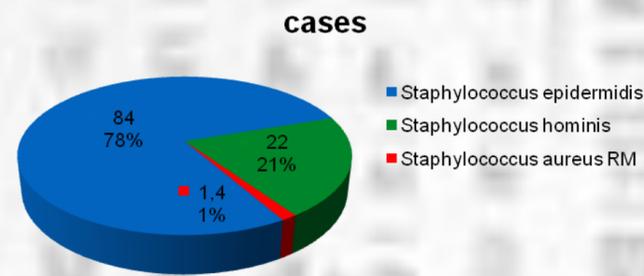
To examine the casuistic data for linezolid-resistant Staphylococcus at our hospital over 5 years (2009-2013), analyze the clinical and epidemiological characteristics and determine the phenotypic profile, and mechanisms of resistance and susceptibility to antimicrobial agents.

Material and Methods

We studied the clinical and microbiological characteristics of linezolid-resistant isolates detected between January 2009 and December 2013. Susceptibility to antimicrobial agents was tested with Vitek-2, E-test and microdilution (EUCAST). A selection of isolates was sent to the Microbiology National Reference Centre in Majadahonda (CNMM) where they analyze the mechanisms of resistance to linezolid, including the presence of the *cfp* gene, the G2576T mutation in the domain V region of the *rmn* gene (which encodes 23S rRNA), as well as other mutations in the genes *rpIC* and *rID*. Latency to linezolid was defined as the time between withdrawing the drug and the appearance of the first positive culture.

Results

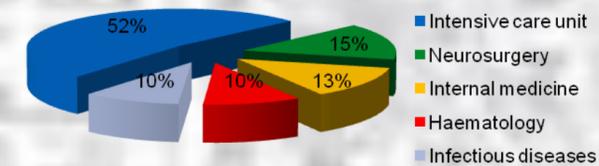
Linezolid-resistant Staphylococcus was isolated in 107 patients (S. epidermidis 84 cases; S. hominis 22 and MRSA 1). A total of 39 samples were sent to the CNMM for resistance study.



The mean age of the patients was 57.8 years and 61% were men; 75% had prior diseases. The mean hospital stay until isolation was 30.37 days, and 72% of patients required admission to the intensive care unit. Prior treatment with linezolid was reported in 78.5% of cases (mean treatment duration of 10.5 days) and the mean latency to linezolid was 9.38 days.

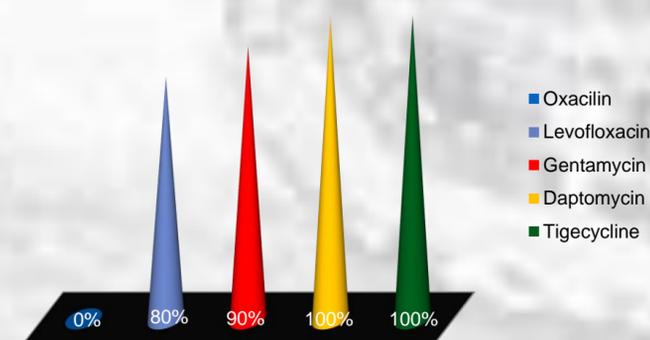
The hospital departments from which the isolates most frequently originated were the intensive care unit (34.5%), neurosurgery (10%), internal medicine (8.4%), haematology and infectious diseases (both 6.5%). Of all the cases, 45% were considered to be clinically important, requiring specific treatment. Crude mortality was 39.3%, though attributable mortality was just 3 cases.

The hospital departments



Concerning sensitivity, 100% of the strains were resistant to oxacillin, 80% to levofloxacin and 90% to gentamycin; 100% were sensitive to daptomycin and tigecycline.

Sensitivity



In the 39 strains sent to the CNMM the following mechanisms of resistance were found:

	<i>cfp</i> gene	G2576T	<i>rpIC(L3)</i> gene	<i>rpID(L4)</i> gene
S.epidermidis(26)	23	26	13	0
S.aureus (1)	1	0	0	0
S.hominis (12)	0	9	7	8

Conclusions

The appearance of resistance to linezolid seems to be restricted to coagulase-negative staphylococci, mainly affecting patients in close contact with the hospital who receive an important amount of antimicrobial agents, particularly linezolid. No clonal dissemination of S. aureus was noted. In the samples sent to the CNMM the most common mutation associated with resistance was G2576T.

