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Study of mupirocin resistance strains within an active surveillance programme over a period of eight years

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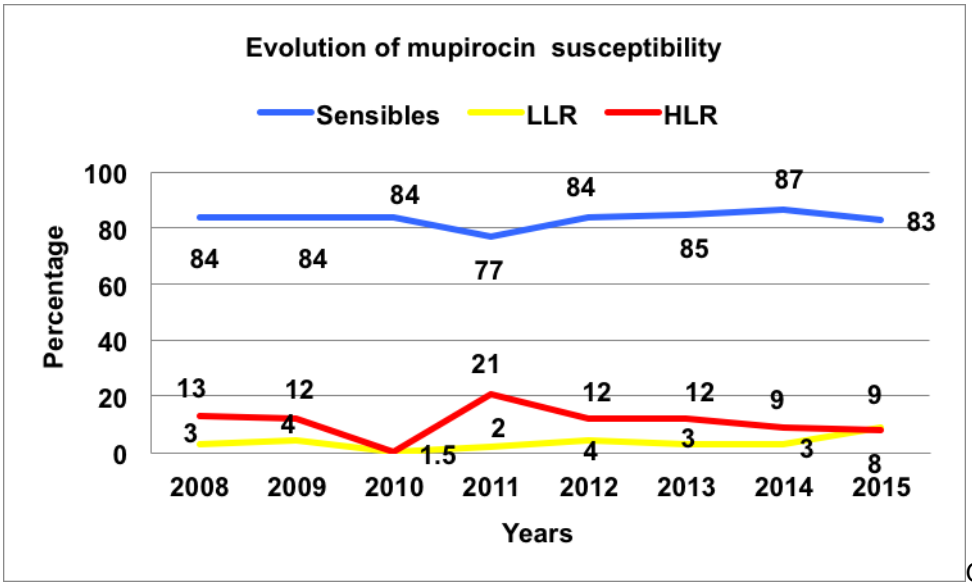
Background: Mupirocin is a topical antibiotic wich is used for treatment of decolonization of MRSA nasal carriers. The emergence of mupirocin resistance among MRSA isolates has been a well-defined phenomenon in many parts of the world. The aim of this study is to evaluate the impact of topical treatment with mupirocin in MRSA nasal carriers on the development of mupirocin resistance after eight years for.

Material/methods: A retrospective study was carried out within an Universal Active Surveillance MRSA program of Hospital Universitario de Canarias (Tenerife, Spain) from February 2008 to December 2015. Patients diagnosed as carriers were designated as requiring contact precautions by the hospital infection control team. Standardized decolonization treatment consisted of mupirocin nasal ointment and full-body wash with chlorhexidine 4% soap for 5 days. MRSA strain was identified by ChromID MRSA® (bioMèrieux). Susceptibility to mupirocin was tested by disk diffusion method and E-test. Disk susceptibility was defined by European Committee on Antimicrobial Susceptibility Testing (EUCAST) breakpoints. For E-test susceptibility were defined three categories, mupirocin susceptibility with minimum inhibitory concentrations (MICs) < 4 mg/mL, low-level mupirocin resistance with MICs from 8 to 256 mg/mL, and high-level mupirocin resistance with MICs ≥512 mg/mL.

Results: A total of 135.874 nasal swabs was tested and 3.333 (2.45%) nasal MRSA were isolates. 3.209 (96%) strains were mupirocin susceptibility tested; 2.681 (83%) strains were mupirocin susceptible and 528 (17%) isolates were mupirocin resistant. Of these 111 (4%) were low-level

mupirocin resistance and 417 (11%) were high-level mupirocin resistant (Graphic 1). Over the period, mupirocin susceptibility has remained withouth signiticant variations (p=0.21), the prevalence of low-level mupirocin resistance have been increased (p= 0.003) and a the prevalence of high level mupirocin resistance have been decreased (p= 0.004). 14 (0.5%) mupirocin susceptibility strains acquired low level resitance and 28 (1%) acquired high-level resistance after decolonization treatment.



Graphic 1.

Conclusions: Despite of the use of mupirocin as decolonization treatment, there was not evidence of increasing mupirocin resistance; even more, high level mupirocin resistance has been decreased in the last years. The use of topical mupirocin as a decolonizing agent has been proved to be effective in the short term suppression and it helps to decrease the infection risk in general population. It is safe, well tolerated, and not systemically absorbed, which makes it an ideal agent for decolonization.