

**Ceftaroline Activity against *S. aureus* Clinical Isolates from Argentina: Association with Different MRSA Clonal Types**

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**Abstract:**

MRSA is an increasing problem worldwide, both in hospitals (healthcare-associated-HA) and in the community (community-associated-CA). In a previous study, we demonstrated that higher rates of MRSA were mainly associated with the spread of two CA-MRSA clones ST5-IV (32%) and ST30-IV (32%) and one HA-associated ST5-I Cordobes/Chilean (19%) (Egea *et al.* Int J Med Microbiol 2014; 304:1086-99). The aim of the present study was to evaluate in the same collection, ceftaroline (CPT) susceptibility and its association with the different MRSA clonal types **Methods:** 591 consecutive *S. aureus* clinical isolates were collected in 66 hospitals from 20 provinces and BA City in Argentina, 322 were MRSA (54.5%). Susceptibility to CPT was performed by agar dilution and interpreted according to CLSI M100-S25. The 322 MRSA isolates (231 CA and 91 HA) were previously studied by SCC*mec*, spa-typing, PVL, PFGE and MLST by standard procedures **Results:** The prevalence of intermediate (I) resistance to CPT (MIC 2mg/L) was 6.4% (38/591) for *S. aureus*, MIC<sub>50/90</sub> 0.25/1 mg/L, range 0.06-2 mg/L. All MSSA isolates were susceptible to CPT with MIC<sub>50/90</sub> 0.25 mg/L, range 0.06-0.25 mg/L. Among MRSA, 11.8% (38/322) were CPT-I. CPT resistant isolates were not detected (MIC<sub>≥4</sub> mg/L). The susceptibility profiles of CA and HA-MRSA clones are shown in Table. **Conclusions:** CA-MRSA isolates were CPT susceptible independently of the clone involved. In contrast, in HA-MRSA isolates, CPT susceptibility was strongly associated to the clonal type, being ST5-I Cordobes/Chilean the main clone associated with CPT-I isolates

Table. Susceptibility profiles to ceftaroline (CPT) of MRSA clones.

MRSA	Clones	N°	n (%) CPT Susceptible MIC ≤ 1 mg/L	n (%) CPT Intermediate MIC 2 mg/L	CI <sub>M50/90</sub> (mg/L)	Range (mg/L)
CA-MRSA	ST5-IV	103	103 (100)	0	0.5 / 0.5	0.25 - 1
	ST30-IV (South West Pacific)	103	103 (100)	0	0.5 / 0.5	0.25 - 1
	ST72-IV (USA 700)	10	10 (100)	0	0.5 / 0.5	0.25 - 0.5
	ST8-IV (USA 300)	5	5 (100)	0	0.5 / 0.5	0.5
	Other	10	10 (100)	0	0.5 / 0.5	0.25 - 0.5
	All CA-MRSA	231	231 (100)	0	0.5 / 0.5	0.25 - 1
HA-MRSA	ST5-I (Cordobés/Chilean)	63	27 (42.9)	36 (57.1)	2 / 2	1 - 2
	ST239-IIIa (Brazilian)	7	5 (71.4)	2 (28.6)	1 / 2	1 - 2
	ST100-IVnv (Pediatric)	21	21 (100)	0	0.5 / 0.5	0.25 - 0.5
	All HA-MRSA	91	53 (58.2)	38 (41.8)	1 / 2	0.25 - 2
<b>Total MRSA</b>		<b>322</b>	<b>284 (88.2)</b>	<b>38 (11.8)</b>	<b>0.5 / 2</b>	<b>0.25 - 2</b>