COLONIZATION WITH *STAPHYLOCOCCUS AUREUS* IN COMMUNITY-DWELLING SPANISH CHILDREN (COSACO). PRELIMINARY DATA ON A MULTICENTER NATIONWIDE STUDY.

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Background

Prevalence of *Staphylococcus aureus* and MRSA colonization may be rising among European children. There is marked geographical variation in MRSA burden so nationwide paediatric data are warranted. Our aims are to assess current prevalence and epidemiology of nasal colonization by *S. aureus* and MRSA in children in Spain and risk factors associated in order to guide empirical treatment policies.

Methods

An observational, prospective, multicenter study in primary care centres all over Spain including patients <14 years with no other infectious diseases at time of enrollment was conducted. All provinces in Spain were included (rural and urban settings) and number of patients in each area were representative of total children population of each area. 70 primary care paediatricians from a preexisting research network (PAPenRed) accomplished the enrollment by a routine protocol, which included homogenous age distribution. Clinical-epidemiological data were assessed and nasal aspirates collected (March to July 2018) for culture and characterization of antibiotic resistance of *S. aureus* in 27 hospital-based microbiology laboratories.

All isolated strains were sent to the National Microbiology Center where molecular characterization of MRSA strains is currently being performed.

Results

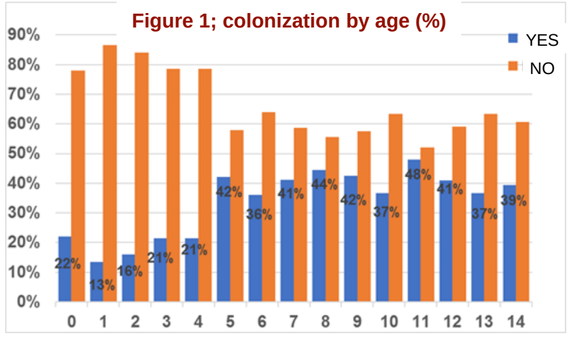
A total of 1876 patients were enrolled (mean age 6.59 –SD: 4.36-; 50.4% female).

1. Prevalence of colonization and risk factors

Prevalence of colonization with *S. aureus* was 33% (95% CI, 30.8–35.1). Total MRSA prevalence was 1.44% (95% CI, 0.78–2.1) and 4.4% (95% CI, 2.72–6.08) among colonized children.

Factors associated with increased risk of *S. aureus* colonization were age ≥ 5 years (Figure 1), male sex, urban setting, day-care or school attendance, previous cutaneous infection and presence of chronic disease (Table 1).

Figure 1; colonization by age (%)



Prevalence of *S. aureus* colonization in subgroups (95% CI)			
Age			
Age 0-4 years	Age ≥ 5 years	OR	p
18.99% (15.9 - 21.9)	40.54% (38 – 43)	2.92 (2.33 - 3.67)	<0.00001
Sex			
Female	Male	OR	p
29.5%	36.5%	1.37 (1.13 - 1.67)	0.0053
Urban vs. rural setting			
Urban	Rural	OR	p
34% (31 – 37)	27% (22 - 32)	1.37 (1.03 - 1.81)	0.029
Day-care or school attendance			
Day-care or school	No day-care or school	OR	p
35.77% (33-38)	20.24% (16 - 25)	2.19 (1.65 – 2.92)	<0.00001
Previous cutaneous infection throughout the child's life			
Had previous infection	No previous infection	OR	p
38% (33 – 43)	32% (30 – 35)	1.29 (1.01 – 1.63)	0.027
Presence of chronic disease (CD)			
CD	Healthy	OR	p
38% (35 – 42)	30% (28 – 33)	1.44 (1.18 – 1.76)	0.00016

Other factors as origin of the child, previous systemic antibiotic consumption or previous cutaneous infections in household members were non-significant.

The only factor associated with increased risk of MRSA colonization was rural setting (OR 3.49; 95% CI, 1.46-8.37).

Logistic regression analysis showed significantly higher probability of colonization in older children, male sex, urban setting and chronic diseases.

2. Analysis of resistance to other antibiotics

Percentage of susceptible (green), intermediate (yellow) or resistant (red) strains to the most frequently tested antibiotics are shown on Figure 2. Some antibiotics were not tested in all strains.

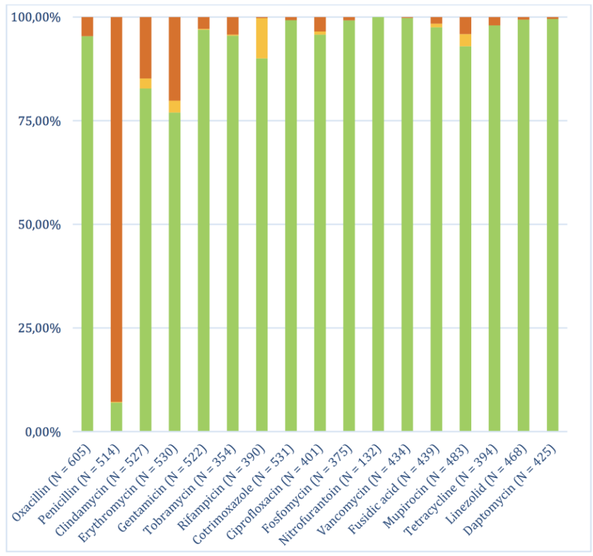
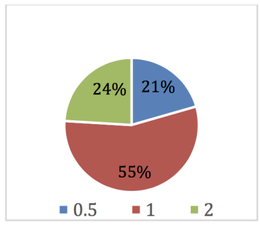


Figure 2

Of note, 14.8% of tested strains were clindamycin resistant. Cotrimoxazol and linezolid resistance strains were less than 1%. Vancomycin resistant was also rare (<0.5%) and minimum inhibitory concentration (MIC) was also investigated (Figure 3).

Figure 3



Conclusions

1. Prevalence of colonization with *S. aureus* in Spanish children is higher than expected. MRSA colonization prevalence is low but higher than reported in adults.
2. Risk factors for *S. aureus* colonization were age ≥ 5 years, male sex, urban setting and chronic disease.
3. Clindamycin resistant strains are frequent.