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An update of serogroup Y meningococci in Italy: 2012-2014

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Objectives: During the last twenty years significant increase of serogroup Y *Neisseria meningitidis* cases has been reported. In Italy, although the incidence of Invasive Meningococcal Diseases has remained quite stable in 2012-2013 (0.23-0.27 cases/100.000 inhabitants), the rate of meningococcal serogroups has been changed. As in other European Countries, serogroup B and C are responsible for the majority of IMD cases; however, an increase of serogroup Y isolates has been also observed in recent years. The aim of this analysis was to update previous data on Italian serogroup Y meningococci from 2012 through 2014.

Methods: From 2012 to 2014 a total of 48 serogroup Y cases has been reported. Serogroup and antibiotic susceptibility for penicillin, ciprofloxacin, ceftriaxone and rifampin were determined. Each isolate was genetically characterized by MultiLocus Sequence Typing (MLST), PorA-VR1 and VR2 typing and FetA typing, as described in <http://neisseria.org/>. MLST data were analysed by eBURST, version 3. Moreover, the *lpxL1* gene amplification and sequencing were also performed.

Results: During the study period the proportion of serogroup C isolates increased from 27% in 2012 to 33% in 2014, whereas serogroup B decreased from 50% in 2012 to 45% in 2014. The proportion of serogroup Y was stable over time representing the 16% of the total. Of the 48 patients infected by serogroup Y meningococci, 16 were women and 32 men, with an average age of 33 years, older than patients infected by other serogroups, similarly to what already published in Italy. The most frequent clinical picture was meningitis (48%). ST-23 clonal complex (cc), previously reported as predominant, is now the only cc detected in serogroup Y Italian meningococci. PorA VR1, VR2 and FetA variants, most frequently found, were 5-2, 10-2 and F2-13. Moreover, an increase of PenI meningococci has been observed, together with mutations in the *lpxL1* gene in all the examined serogroup Y meningococci.

Conclusion: In Italy, serogroup Y cases remain stable and represent the 16% of the total. The Y isolates were genetically similar. Monitoring of serogroup Y meningococci is of great importance for the implications on vaccination strategies for specific age groups.