

Surveillance of invasive Group A streptococci in Belgium (January 1, 2009-September 30, 2014)

K. Loens¹, E. De Herdt¹, S. Verkroost¹, C. Lammens¹, M. Ieven¹, H. Goossens¹

¹University Hospital Antwerp, Antwerp- Edegem, Belgium

Objectives: Invasive group A streptococcal (iGAS) infections cause significant morbidity and mortality. Currently, there are not many data available on the epidemiology of iGAS in Belgium. A survey was initiated to assess the burden of iGAS infections in Belgium, describe their clinical characteristics, and type the strains responsible for these infections. The survey was conducted on invasive strains received from hospital laboratories that submitted strains on a regular basis to the Belgian Reference Centre for Group A Streptococci (NRC) between 01/01/2009 and 30/09/2014. Demographic and limited clinical data were obtained.

Methods: The identification of the iGAS strains was confirmed by conventional diagnostics and by MALDI-TOF Mass Spectrometry. Antibiotic susceptibility was determined by using standard bacteriological procedures (disk diffusion and e-test) according to CLSI (till 2012) and EUCAST from January 1, 2012 onwards. The following antibiotics were tested: penicillin, erythromycin, clindamycin, tetracycline and telithromycin. Erythromycin induced resistance was investigated as well. Emm-typing was done according to the CDC-protocol.

Results: Since 2009, the Belgian NRC receives an increased number of iGAS strains from laboratories submitting strains on a regular basis: n=183, 179, 190, 209, 211 and 196 in respectively 2009, 2010, 2011, 2012, 2013 and till September 30 in 2014. Seventy four % of strains were isolated from blood, 6.2% were sterile wound isolates, 4.2% of strains were isolated from tissue, 2.1% were isolated from pleural fluid and 13.5% of isolates were cultured from other sterile specimens. Overall, the most prevalent emm-types were emm1, 3, 89, 12, 28, 6, and 75 accounting for 23.3%, 11.3%, 9.1%, 7.2%, 7.0%, 5.5%, 4.7% respectively. All strains were still sensitive to penicillin. A low level of macrolide resistance was detected over the last 5 years (1.7%-5.7%). An increase in emm1 was observed from 14.6% in 2012 to 29.9% in 2013. An even higher increase in emm1 was found in young children (4.2% to 51.4%) during the same period. An increase in emm75 was observed in 2014 compared to 2013. Fatal outcomes were registered in <10% of cases overall. Emm1, emm3, emm6 and emm 89 were responsible for 36.6%, 19.7%, 5.6% and 5.6% of fatal outcomes respectively.

Conclusion: Since Belgian laboratories for clinical microbiology are not legally bound to submit their iGAS strains to the NRC, it is difficult to conclude on the exact epidemiology of iGAS. However, based on the *S. pyogenes* submissions in the last 5 years by the same laboratories, the NRC received an increased number of isolates. Emm1 and emm3 were associated with fatal outcomes and are more prevalent in children than in adults. Erythromycin resistance is still low among the submitted iGAS strains.