

O093

2-hour Oral Session

Trends in antimicrobial resistance

Surveillance of gonococcal decreased susceptibility to extended-spectrum cephalosporins in France

C. De Curraize<sup>1</sup>, A. Goubard<sup>1</sup>, G. La Ruche<sup>1</sup>, H. Jacquier<sup>2</sup>, P. Sednaoui<sup>1</sup>, E. Cambau<sup>3</sup>, B. Bercot<sup>3</sup>

<sup>1</sup>APHP-Lariboisière-St Louis–Fernand Widal Hospital-Laboratory of Bacteriology-Virology and Laboratory of Bacteriology-University Hospital of Dijon, Plateau technique de Biologie,, Dijon Cedex, France

<sup>2</sup>University Paris Diderot-INSERM-IAME-UMR 1137-Sorbonne Paris Cité / APHP-Lariboisière-St Louis–Fernand Widal Hospital-Laboratory of Bacteriology-Virology, Paris, France

<sup>3</sup>University Paris Diderot-INSERM-IAME-UMR 1137-Sorbonne Paris Cité / APHP-Lariboisière-St Louis–Fernand Widal Hospital-Laboratory of Bacteriology-Virology & Associated Laboratory for the National Reference Centre for gonococci, Paris, France

**Objectives:** Sexual Transmitted Infections (STIs) due to *Neisseria gonorrhoeae* (NG) are reemerging and they constitute a major public health problem in the world. In France, the first high-level ceftriaxone-resistant NG clinical strain (F89) was isolated in 2010, where as 3<sup>rd</sup> generation cephalosporins (C3G) constitute the first-line treatment of uncomplicated urogenital gonorrhoea. This study was conducted to describe an intensified surveillance of *N. gonorrhoeae* isolated among the voluntary sentinel network of French laboratories.

**Methods:** From January 2010 to December 2013, 5211 NG isolates were collected from patients consulting for NG infections. The MICs to eight antimicrobials, including cefixime and ceftriaxone, were determined by E-test method (Biomerieux). Cephalosporin-resistant NG isolates were screened for resistance determinants to  $\beta$ -lactams (*penA*, *ponA*, *penB*, *mtrR* and *pilQ* genes) by PCR and sequencing. Molecular epidemiology typing was performed by the reference *N. gonorrhoeae* Multiantigen- Sequence-Typing (NG-MAST).

**Results:** Among the 5211 strains studied, MICs to 3<sup>rd</sup> generation cephalosporin ranged from 0.002 to 0.50 mg/L. Four NG isolates with a decrease susceptibility to C3G (MICs $\geq$ 0.125 mg/L) were explored. These 4 strains were also resistant to tetracycline and to quinolones (for 3 of them). They were isolated from three men suffering of urethritis (1 in 2010, 2 in 2013) and from one woman with cervicitis (in 2013) living in different regions of France. Molecular typing using the NG-MAST method assigned the ST type 225, 3378, 6711 and a novel ST to these 4 isolates, highlighting that these isolates were not clonally related. Characterization of the mosaic type *penA* alleles revealed that two strains harbour the PBP2 pattern XXXIV and the two others, the PBP2 pattern XXXVI or XXXVI-like (ie mutation P551L instead of P551S). Associated to these mosaic *penA* alleles, we found (i) a L421P substitution in the PBP1 protein, (ii) a G101K plus A102N (or A102D) replacement in the PorB1b protein and (iii) a single adenine deletion in the promoter of the *mtrR* gene for all of the four isolates. In addition, only one strain harbors a N648S mutation in the PilQ protein.

**Conclusion:** This work shows that the situation is stable in France but highlights that decreased susceptibility to C3G occurs in different genetic backgrounds of NG, other than those of the successful ST1407 clone, and involve several combinations of mutations.