

Outbreak of *Neisseria gonorrhoeae* with decreased susceptibility and resistance to third-generation cephalosporins in Córdoba City, Argentina

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Background

As part of the Gonococcal Antimicrobial Susceptibility Surveillance Programme-Argentina (GASSP-AR), 70 laboratories across Argentina submit all isolates to the National Reference Laboratory of STDs (NRL), Buenos Aires. From 2011 to 2016, 606 isolates were submitted from Rawson Hospital, Córdoba City, which is the second most populated city in Argentina (1,500,000 residents). Since 2012, an increased number of isolates with decreased susceptibility or resistance to third-generation cephalosporins (ESC-DS/R) were observed.

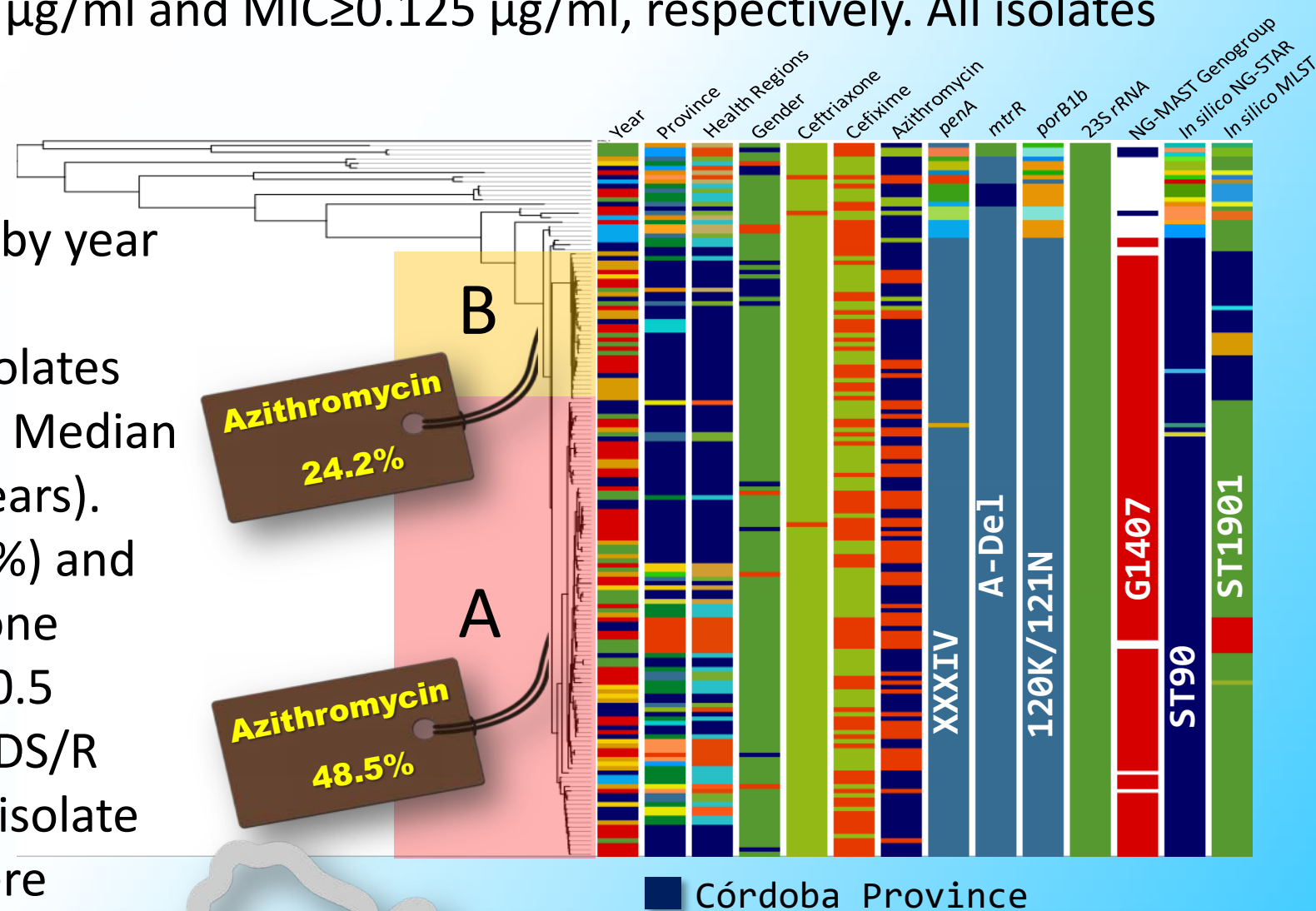
The aim of this study was to elucidate the suspected outbreak of ESC-DS/R gonococcal isolates in Córdoba, Argentina.

Methods

Antimicrobial susceptibility testing for ceftriaxone, cefixime, azithromycin, ciprofloxacin, benzylpenicillin, and tetracycline was performed using agar dilution method (CLSI guidelines) and 2008 WHO gonococcal reference strains for quality control. ESC-DS/R was defined as having MICs of ceftriaxone and/or cefixime of MIC \geq 0.06 μ g/ml and MIC \geq 0.125 μ g/ml, respectively. All isolates were whole genome sequenced.

Results

The proportion of ESC-DS/R isolates (n=79) by year was 0/2011, 2.9/2012, 13/2013, 8.3/2014, 25.7/2015 and 13.1/2016. Seventy (90%) isolates were obtained from male urethral samples. Median age of patients was 23 years (range: 5-55 years). According to EUCAST breakpoints, one (1.3%) and 38 (48%) isolates were resistant to ceftriaxone (MIC=0.25 μ g/ml) and cefixime (MIC=0.25-0.5 μ g/ml), respectively. Thirty-four (43%) ESC-DS/R isolates, including the ceftriaxone resistant isolate and 14 (18%) cefixime resistant isolates, were resistant to azithromycin. Sixty-nine (87%) of the ESC-DS/R isolates were resistant to ciprofloxacin, benzylpenicillin, and tetracycline. Most isolates belonged to NG-MAST genogroup 1407.



Conclusion

The outbreak of ESC-DS/R gonococcal strains, including concomitant resistance to azithromycin, in Córdoba, Argentina is a major concern. National guidelines recommend ceftriaxone (125-250 mg) as first-line treatment of gonorrhoea in Argentina. Dual antimicrobial therapy (e.g. ceftriaxone 250 mg plus azithromycin 1 g) have to be considered, however, also this therapy is threatened by the spread of gonococcal strains with resistance to both ceftriaxone and azithromycin.

*Multidrug-resistant

*MDR-NG
90%

Genogroup
ST1407
96.1%