HIGH PREVALENCE OF CEFTRIAXONE RESISTANCE ASSOCIATED WITH THE PENA-60 ALLELE AMONG *NEISSERIA GONORRHOEAE* ISOLATES IN HANOI, VIETNAM

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Background:
Ceftriaxone is recommended as empiric therapy for *Neisseria gonorrhoeae* infections, but resistance is increasing. The penA-60 allele is associated with ceftriaxone resistance and is of international concern. Our study investigated the prevalence of ceftriaxone resistance and the penA-60 allele in *N. gonorrhoeae* in Hanoi, Vietnam.

Methods:
All *N. gonorrhoeae* isolates obtained through routine laboratory procedures at the Hanoi Medical University Hospital microbiology laboratory from January to December 2023 were selected for additional testing. Antibiotic susceptibility testing was performed according to Clinical and Laboratory Standards Institute procedures and minimum inhibitory concentrations (MICs) were determined using Etests (bioMerieux, France). Direct detection of the penA-60 allele was performed for all isolates with ceftriaxone MICs ≥ 0.125 mg/L; isolates were grown on GC agar with 1% Vitox, and 1% Hemoglobin, (Oxoid, United Kingdom), underwent DNA extraction, followed by a real-time PCR assay to detect the presence of the penA-60 allele. Descriptive statistics were used to summarize the ceftriaxone median MIC, interquartile range (IQR), and MIC_{90}.

Results:
Of the 243 *N. gonorrhoeae* isolates, 12 were non-viable and excluded. Among the 231 available isolates, 97.0% (224/231) were obtained from urethral specimens. The median MIC was 0.023 mg/L (IQR: 0.016-0.25) and the MIC_{90} was 0.5 mg/L. Ceftriaxone MICs ≥0.125 mg/L were found in 29.4% (68/231) of isolates and 22.1% (51/231) had MICs >0.25 mg/L. The penA-60 positivity was 60.3% (41/68) among those with MICs ≥0.125 mg/L and 60.8% (31/51) among isolates with MICs >0.25 mg/L.

Conclusion:
A very high prevalence of ceftriaxone resistance was found among *N. gonorrhoeae* isolates in 2023 within one hospital system in Hanoi, Vietnam. The penA-60 allele was detected in the majority of ceftriaxone-resistant isolates, increasing concerns about international dissemination. In Vietnam, rapid detection of ceftriaxone resistance by direct detection of the penA-60 allele can aid diagnostic and surveillance efforts.

Disclosure of Interest Statement:

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