

Antimicrobial-resistant *Neisseria gonorrhoeae*: A threat to public health

Gabriela Bisinotto Skaff¹, Bianca de Souza Lima², Gabriela Dezan Monção³, Marcel Cicuto Ferreira do Carmo⁴, Gabriela Mussato Salicio⁵, Felipe Sanches Carneiro⁶, Bárbara dos Reis Dal Lago Rodrigues⁷, Celso Dal Lago Rodrigues Neto⁸, Jéssica Vanessa Iglesias Furlaneto⁹, Victor Santos Coll¹⁰.

ABSTRACT

Neisseria gonorrhoeae is the second most common sexually transmitted infection and has attracted attention due to its low therapeutic efficacy. However, over time, the gonococcus developed decreased susceptibility to antimicrobials, which resulted in frank resistance to the classes, reducing drug options. Thus, the study aims to discuss the resistance of gonococcus to antibiotics, aiming to stimulate debates on the subject. To this end, 32 articles from the PubMed and Scielo platforms were selected. Gonorrhea affects mucous membranes of the lower genital tract, rectum, oropharynx, and conjunctiva. Its clinical picture ranges from the absence of symptoms to episodes of salpingitis, epididymitis and neonatal conjunctivitis. Leading to unquestionable social impacts. The Ministry of Health indicates ceftriaxone and azithromycin as treatments. The use of two antimicrobial classes is based on the fact that they have different mechanisms of action aimed at delaying the development of resistance. Gonococcus has been described as having high susceptibility to many drug classes, the first being sulfonamides, however, the bacterium has demonstrated the ability to develop resistance. This fact happened with other antibiotics, due to the fact that the gonococcus has the ability to alter its genetic material with mutations that allow adaptation and transformation in its life cycle. In Brazil, the first penicillin-resistant gonococcal strain was isolated in 1985. Over the years, resistance has spread to other antimicrobials, such as tetracycline, amphenols, macrolides, and quinolones. Between 2015 and 2016, the rate of resistance to ciprofloxacin in the country was 55.6%. It is estimated that 0.1% of the 80 million cases of gonococcus reported each year are tested for antimicrobial resistance. Finally, it is believed that further research should focus on the mutagenic capacity of the bacterium to evade the mechanisms of action of antibiotics, and it is not feasible to only broaden the spectrum of drugs or associate drugs, since they would only be temporary alternatives.

Keywords: Gonorrhea, *Neisseria gonorrhoeae* infection, *Neisseria gonorrhoeae*.

¹ Anhanguera UNIDERP – Mato Grosso do Sul

² Universidade Federal de Mato Grosso do Sul - Mato Grosso do Sul

³ Ceres College – São Paulo

⁴ Union of Great Lakes Colleges – São Paulo

⁵ Union of Colleges of the Great Lakes – São Paulo

⁶ Anhanguera UNIDERP – Mato Grosso do Sul

⁷ Anhanguera UNIDERP – Mato Grosso do Sul

⁸ Anhanguera UNIDERP – Mato Grosso do Sul

⁹ Anhanguera UNIDERP – Mato Grosso do Sul

¹⁰ Anhanguera UNIDERP – Mato Grosso do Sul