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Scientific letter

Macrolide and fluoroquinolone resistance in *Mycoplasma genitalium* in the Northwestern region of Spain, 2019–2022



Resistencia a macrólidos y fluoroquinolonas en *Mycoplasma genitalium* en la región noroeste de España, 2019-2022

Mycoplasma genitalium (MG) is a sexually transmitted pathogen responsible for 10–35% of non-gonococcal urethritis in men. In women, it is associated with urethritis, cervicitis, endometritis and pelvic inflammatory disease.¹ Due to its highly fastidious nature, this infection should be diagnosed using nucleic acid amplification techniques.² The lack of peptidoglycan in MG precludes the use of antibiotics acting on the cell wall and limits its treatment choice.³ European treatment guidelines recommend azithromycin for the treatment of uncomplicated MG infection or sexual contact, and moxifloxacin as the most commonly used second-line antimicrobial.¹ The rapid emergence and spread of antimicrobial resistance in MG is a growing concern.^{2,3} In Europe, the reported azithromycin resistance rate ranges from 0% to 82%, and from 3 to 11% in the case of moxifloxacin, depending on the population studied.⁴

The aim of this study was to describe the prevalence of resistance to antibiotics in MG in the sanitary region of the province of Lugo (population of 323,989 inhabitants in 2022) between January 2019 and December 2022. During this time, a total of 4122 specimens from 2622 patients with suspected sexually transmitted infection were tested using RT-PCR Allplex™ STI Essential Assay (Seegene®). Specimens positive in this assay were subsequently tested by the RT-PCR Allplex™ MG & AziR Assay (Seegene®) and RT-PCR Allplex™ MG & MoxiR Assay (Seegene®). The first sample from the first episode was taken for each patient.

A total of 73/2622 (2.8%, 95% CI 2.2–3.5%) patients tested positive for MG (39 male and 34 female). The median age of all 73 patients was 33.5 years (IQR 26.5–40.5) (males: 37 years (IQR 31–41); females: 28 years (IQR 24–36)). The clinical features and therapeutic management of the 73 patients are described in Table 1. Seven medical records were not completely available. Considering coinfection with other sexually transmitted microorganisms, 20/73 (27.4%) cases were in coinfection with either *Chlamydia trachomatis* (CT) (16.4%), *Neisseria gonorrhoeae* (NG) (4.1%), *Trichomonas vaginalis* (TV) (4.1%), CT and NG (1.4%), CT and TV (1.4%).

Macrolide resistance-associated mutations were detected in 15/73 (20.6%, 95% CI 12.9–31.2%) of the specimens analysed. This rate is similar to other studies performed in different parts of our country,^{2,5,6} but lower than in southern Spain with a growing trend in recent years.^{7,8} In our study, the most prevalent mutations conferring macrolide resistance were A2058G (5/15) (33.3%) and A2059G (5/15) (33.3%), followed by A2058T (4/15) (26.7%) and A2058C (1/15) (6.7%). The most frequent mutations associated

Table 1

Clinical features and therapeutic management in patients with *Mycoplasma genitalium* infection.

Characteristics	Frequency, no (%) n = 73
Specimens	
Endocervical swab	31 (42.5)
First-void urine	18 (24.7)
Urethral swab	12 (16.4)
Rectal swab	11 (15.1)
Pharyngeal swab	1 (1.3)
Clinical findings	
Symptomatic	
Urethritis	13 (17.8)
Cervicitis	8 (11.0)
Pelvic inflammatory disease	3 (4.1)
Asymptomatic	
HIV high-risk contact	20 (27.4)
Non HIV high-risk contact	17 (23.3)
Sexually transmitted infection screening	2 (2.7)
Not available	10 (13.7)
HIV infection	
Present	19 (26.0)
Absent	47 (64.4)
Not available	7 (9.6)
Treatment	
Yes	
Doxycycline (100 mg twice daily, 7 days)	14 (19.1)
Azithromycin (5-day regimen)	21 (28.8)
Azithromycin (1 g single-dose)	11 (15.1)
Moxifloxacin (400 mg on day, 7 days)	5 (6.8)
No	15 (20.6)
Not available	7 (9.6)
Medical services	
Sexually Transmitted Infection Unit	27 (37.0)
Primary care	21 (28.8)
Obstetrics and Gynecology Department	15 (20.6)
Emergency Department	10 (13.6)

with high-level macrolide resistance are A2058G and A2059G.^{3,6–9} Although the A2058T mutation is very prevalent in the Netherlands, it is not a frequent mutation in other parts of the world.^{2,3} Our results describe a high rate of resistance (26.7%) and indicate that we must be alert for its possible increase. None of the patients had more than one mutation for macrolide resistance. Fluoroquinolone resistance was detected in 5/73 (6.9%, 95% CI 3.0–15.1%) of the strains. This rate is slightly higher than those described in previous years in our country by other authors.^{2,7,10} The most frequent fluoroquinolone mutation detected was G259A (80%), while G248T (20%) was in second position. These are the most prevalent mutations described by other authors.^{2,3} None of the patients had more than one mutation for fluoroquinolone resistance. In our study, azithromycin given as 500 mg on day one, followed by 250 mg days 2–5 (1.5 g total dose) was the most frequent treat-

ment and is recommended as the primary choice for treatment of MG infections.¹ Dual mutations conferring resistance to both antimicrobials were found in a total of four resistant strains: two A2058G/G259A, one A2058T/G259A and one A2059G/G248T. The presence of dual mutations could increase treatment failure.⁷

The main limitation of this study was the incomplete data, like the sexual habits of the patients and the number of patients lost for follow-up and for the analysis of antibiotic failure.

In conclusion, the dissemination of resistant MG strains is a worldwide health problem and supports the importance of detecting macrolide and fluoroquinolone resistance mutations in order to perform targeted treatment and to prevent the spread of resistant strains.

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Bartonella spp. infection in a person with HIV and advanced immunosuppression: A case report



Infección por Bartonella spp. en persona con VIH e inmunosupresión avanzada: a propósito de un caso

People with HIV (PWH), especially advanced immunosuppression, are susceptible to *Bartonella* spp. infections and complications like hemophagocytic lymphohistiocytosis (HLH).¹ HLH mimics severe systemic infections, complicating diagnosis.² Early diagnosis is crucial for better prognosis and recovery. We report a case of disseminated *Bartonella* spp. infection in PWH with secondary HLH.

A 54-year-old man, born in Spain, with a one-year history of constitutional syndrome and chronic diarrhoea was diagnosed with *Cytomegalovirus* (CMV) ileocolitis, and advanced HIV infection: CD4+ lymphocyte count of 8 cells/ μ L, HIV-1 RNA viral load (VL) of 609,418 copies/mL, CMV VL at diagnosis of 6859 copies/mL, and intestinal biopsies showed viral inclusions.

Following admission in the ward, he started antiretroviral therapy (ART) with bictegravir/emtricitabine/tenofovir alafenamide (BIC/F/TAF) and intravenous ganciclovir. Diarrhoeal symptoms improved and CMV VL decreased. Initial computed tomography (CT) imaging at diagnosis revealed hepatosplenomegaly and mesenteric lymphadenopathy. During follow-up, he showed persistent evening fever, night sweats and general malaise. Laboratory results revealed pancytopenia, initially addressed as valganciclovir side effect, but persisting despite discontinuation. Three weeks later, he was readmitted due to worsening of pancytopenia, hepatic

impairment and elevated acute phase reactants. Bacterial cultures were negative and CMV VL remained low. A PET-CT scan showed elevated metabolic activity in the spinal cord and mesenteric adenopathy, which is consistent with the presence of a lymphoproliferative syndrome (Fig. 1).

The bone marrow aspirate was hypocellular, without evidence of blasts, lymphoid infiltration, hemophagocytosis, or the presence of *Leishmania* spp. or mycobacteria. On suspicion of immune reconstitution syndrome, oral prednisone was started. Despite apparent initial improvement, he was readmitted for a third time due to persistent symptoms and no improvement in pancytopenia. A second

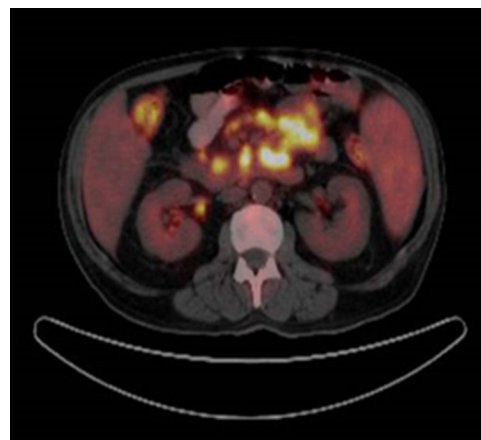


Fig. 1. Mesenteric adenopathy growth in the PET-CT.