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CASE REPORT

Diagnostic difficulties in a very rare case of mycoplasma pneumoniae uveitis

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Introduction: Mycoplasma pneumoniae is known as a common cause of respiratory tract infections, especially in children. Regarding extrapulmonary manifestations, many dysfunctions have been linked to circulating IgM antibodies, including eye diseases and disorders. In this report, we aim to highlight the importance of considering Mycoplasma pneumoniae a potential etiological agent that can cause significant eye structures inflammation. **Case presentation**: We present a case of a 22-year-old male patient who arrived at the Emergency Department complaining of visual acuity decrement. Fundoscopic examination outlined a pale optic nerve, covered by pre-papillary infiltrates and peripheric inflammatory infiltrates, accompanied by signs of vasculitis. Investigations were performed and a multidisciplinary assessment was conducted. General antibiotic and antimycotic treatment and topical non-steroidal anti-inflammatory drops were administrated but his symptoms were aggravating, although it was continuously upgraded. Antibodies for Mycoplasma pneumoniae were determined with positive IgM and macrolide antibiotherapy was administrated, with favorable evolution. **Conclusions**: Mycoplasma pneumoniae should not be excluded as a possible cause of severe ocular inflammations, even in asymptomatic patients. The patient's management should include multidisciplinary assessment for an easier diagnosis in cases of uncertainty.

Keywords: retinitis, uveitis, vitritis, Mycoplasma pneumoniae

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Introduction

Mycoplasma pneumoniae is known as a common cause of respiratory tract infections, especially in children, but there is no absolute knowledge about Mycoplasma pneumoniae and extrapulmonary manifestations, especially ophthalmological diseases and disorders. Researchers have found that there are three possible mechanisms concerning the biological activity of this bacteria: (1) direct mechanism, in which the bacteria induce an inflammatory response at the site of infection; (2) indirect mechanism, by formation of immune complexes and complement activation; (3) vascular occlusion [1]. There is a wide range of diseases related to this infection: cardiovascular, neurological, dermatological, hematological, musculoskeletal, gastrointestinal, urogenital and ophthalmological [2]. In the eye pathology, more frequently there were reported cases of conjunctivitis linked to Mycoplasma pneumoniae, instead of ocular fundus diseases which are very unusual, especially in the absence of any other findings. Corneal ulcers, endophthalmitis, anterior uveitis, panuveitis, multifocal serpiginous choroiditis and retinal exudates or hemorrhages are reported in the literature. In this report, we aim to highlight the importance of considering Mycoplasma pneumoniae a potential etiological agent that can cause significant eye inflammation [3-8].

Case presentation

A 22-year-old male patient arrived at the Ophthalmology Emergency Department of the Clinical County Hospital of Târgu-Mureș, Romania, on March 2nd, complaining of left eye (LE) visual acuity decrement. He described an acute onset, two days before presentation, after working with an angle grinder. No previous medical history was reported and except for his smoking history, he presented an unremarkable general examination (Blood Pressure 120/70mmHg, Heart Rate 70 bpm, respiratory stable, temperature 36,40 C). His visual acuity was lower in his left eye (0.2 uncorrectable with glasses) compared to the right eye (1.0 uncorrectable). Orthoptic examination showed no restrictions or diplopia. Biomicroscopy revealed no conjunctival congestion, no discharge, clear, transparent cornea, no corneal foreign body, medium anterior chamber, round centered pupil, present pupillary reflex in right eye and barely visible pupillary reflex in his left eye. Intraocular pressure was 14mm Hg in both eyes. We performed fundoscopic examination which was normal in the right eye, the optic disk presenting sharp margins and normal coloration, the macula and the blood vessels with no modification encountered, while in the left eye we found a pale optic nerve head, with a pre-papillary infiltrate which covered the contour of inferior-temporally part of the optic nerve, inflammatory infiltrates on the route of the inferior-temporally vessels, sheathing around vessel's walls and an attenuated foveal reflex (Figure 1).

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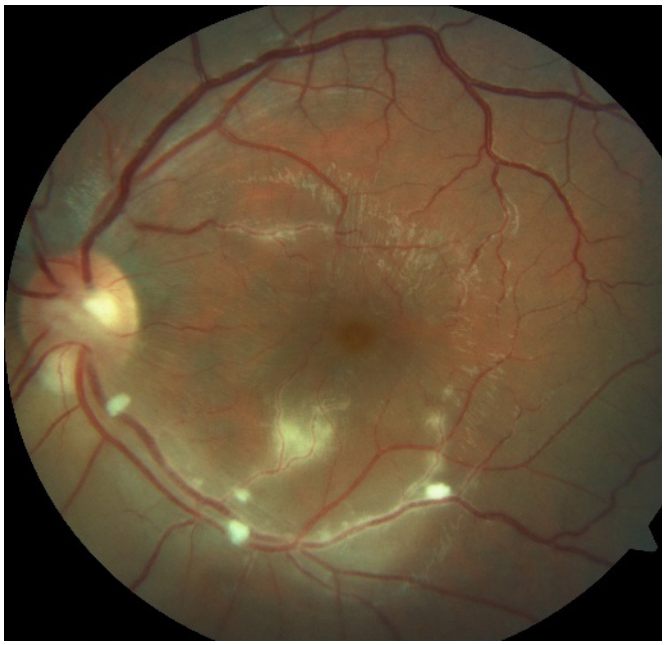

Fig. 1. Color fundus image showing inflammatory lesions and inferior sheathing of the blood vessels

Laboratory analysis was performed: complete blood count, erythrocyte sedimentation rate, glycemia, alanine amino-transferase, aspartate amino-transferase, urea, creatinine, angiotensin-convertase, antinuclear antibodies, antistreptolysin-O test, COVID-19 rapid antigen test, antibodies against Hepatitis Virus type C, Hepatitis B (s) antigen test, antigen and antibodies against HIV infection type 1 and 2, antibodies IgG and IgM against Bartonella henselae, Cytomegalovirus, Herpes Simplex Virus, Toxoplasma, Chlamydia trachomatis, Borrelia and complement c3 and c4. The only laboratory results outside normal limits were: Eosinophils 5.7% (normal 0-4%) and Borrelia IgG 22.28 (normal 0-20 U/ml), but negative IgM. Nasal sampling revealed no bacterial growth. Urinalysis had results outside the normal range as follows: urobilinogen 4 mg/dl (< 1), ascorbic acid 20 mg/dl (neg), proteins 15 mg/dl (< 10), RBC 5-10/microliter (< 5), density 1030 (1015-1022), urinary sediment 4-5 RBC/field, squamous epithelial cells present, 2-3 leukocytes/field.

The next step involved an imagistic evaluation of the patient starting with head Computed Tomography to check if there are any other signs of inflammation in the orbit or in the brain, but no lesions were revealed. Eye ultrasonography emphasized membranous opacities in the posterior vitreous, parapapillary serous retinal detachment measuring about 4 mm, and inferior thickened retina. On Ocular Coherence Tomography (OCT) exam there was reported a cystoid macular edema, detachment of subfoveal neuroepithelium, and edema of the nerve fiber layer between the optic nerve and the macula also associated with papillary edema.

The patient underwent a multidisciplinary assessment: Neurology, Pneumology, Cardiology, Nephrology, Otolaryngology, Rheumatology, Infectious Diseases, and Urology, indicating a suspicion of Urinary Tract Infection and Prostatitis.

While no etiological factor was found to be associated with the inflammation, treatment was started with general antibiotic (cephalosporin), antifungal (triazole), and proton pump inhibitor as well as local non-steroidal anti-inflammatory drops.

Despite treatment ongoing, the evolution was unfavorable, after five days the visual acuity decreased to 0.04 LE, with changes in the posterior pole associating visible macular edema, perivascular exudate, and hemorrhages and the inflammatory lesions advanced as well around the superior blood vessels (Figure 2). Ultrasound was repeated and confirmed the aggravated status: posterior vitritis, inferior-papillary, and superior-temporally serous detachments of the retina.

Treatment was reconsidered and the following were added to initial therapy: general antiviral medication (synthetic nucleoside analog), broad-spectrum anti-helminthic, steroidal anti-inflammatory drugs, low molecular weight heparin (continued with antiplatelet medication), and hepatoprotectives. The patient presented a favorable but slow evolution with a LE visual acuity of 0.4 (uncorrectable) after two months of medication.

Reassessment was periodically performed, but he returned after two months complaining of a very slight decrease of vision in his LE, corresponding to a LE visual acuity of 0.3 uncorrectable. Intraocular pressure was still within normal range, 14 mmHg, with no pathological changes of the eye's anterior pole displaying a normal orthoptic examination. When examination of the eye posterior pole was performed, new diffuse and active inflammatory lesions on the superior-temporal vessels path were

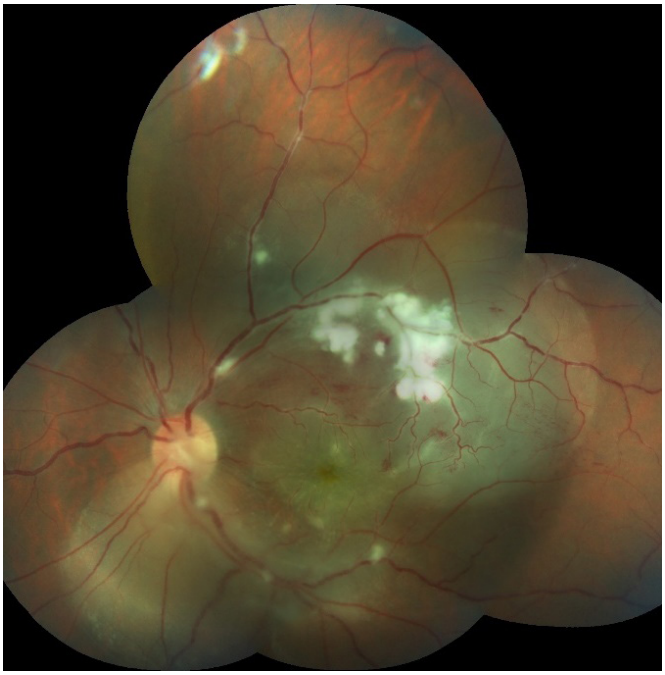

Fig. 2. Color fundus image showing evolution under treatment: macular edema, perivascular exudate, hemorrhages, inflammatory lesions around the superior and inferior blood vessels

highlighted (Figure 3). These changes were confirmed by OCT, outlining as well that traction of the epiretinal membrane on top of the macula, inducing edema and aggravating the existing inflammatory state.

Laboratory analysis and routine tests were repeated and additionally, HLA B27 antigen test was performed. The patient neutrophils were higher than normal this time with a percentage of 83.4% (limits 42-77%).

Treatment was re-initiated with general antibiotic, antiviral, antifungal, steroidal anti-inflammatory drugs, proton pump inhibitor, and locally non-steroidal anti-inflammatory and dilators of the pupil drops.

We asked for an Infectious Disease second opinion and re-evaluation of our patient and we performed IgG and IgM for Mycoplasma pneumoniae tests at their suggestion, even though our patient did not have any respiratory symptoms. Both IgG 3.21 (normal 0-0.9) and IgM 1.03 (normal 0-0.9) were positive. The patient received targeted treatment with a macrolide class of antimicrobials and his visual acuity was followed up under treatment which reported an improvement of LE visual acuity (0.8, uncorrectable). Examination of the posterior pole showed a fibrotic remodeling of the inflammatory lesions and a quiet cicatricial state that was furtherly solved by surgical removal of the membranes (Figure 4). Prior to publication, informed consent was obtained from the patient.

Discussions

Even if Mycoplasma pneumoniae is primarily known as an etiological cause of respiratory tract infections, up to 25% of patients develop extrapulmonary manifestations, in the presence or even absence of any other signs or symptoms [9], very rarely identified as a cause of ocular diseases and disorders. Several ophthalmological conditions related to this infection were reported in the literature, from the anterior pole to the vitreous and the retina, even in some cases of panuveitis. But we did not find any other case in the literature presenting similar inflammatory changes as our patient did, no other posterior pole description of Mycoplasma pneumoniae infection reported with inflammatory infiltrates and blurred edges. Even though our patient underwent a pneumological complete evaluation after first presentation, no signs or symptoms indicative of an infective state were presented. The initiated treatment with cephalosporines could not have been effective, as these antibiotic targets cell walls, which Mycoplasma does not present [10]. Thus, the initial slow resolution of the inflammatory lesions may have been related to the anti-inflammatory drugs, which only controlled the lesions without effective resolution. There are three possible therapeutic approaches reported in the literature, related to the three possible paths of action: microbiological (treatment with antibiotic), immune therapy (immunomodulators), and hematological (anticoagulants) mechanisms [11]. Regarding our patient management, he first received an empirical treatment, completed afterward with low molecular weight heparin, which targeted the direct mechanism and the vascular occlusion. No significant improvement occurred until targeted antimicrobial was initiated, four months after the initial presentation. A very interesting fact was that, on the second presentation, the lesions were still confined to the LE with no other signs or symptoms. The management of this case outlines the importance of multidisciplinary assessment to obtain a proper outcome. This case presented a favorable outcome only after targeted therapy was established and hopefully, the vision was only reversibly altered.

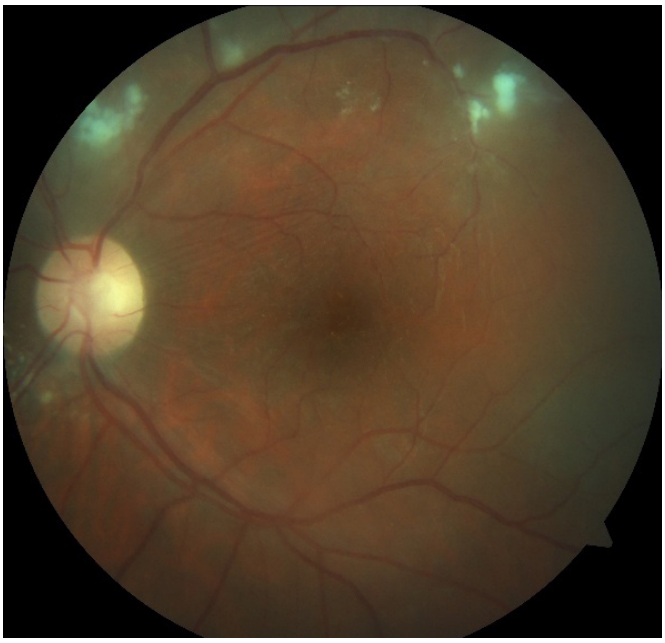

Fig. 3. Color fundus image: inflammatory membranes pre- and para-papillary and anterior to the macula, active inflammatory lesions more numerous superiorly

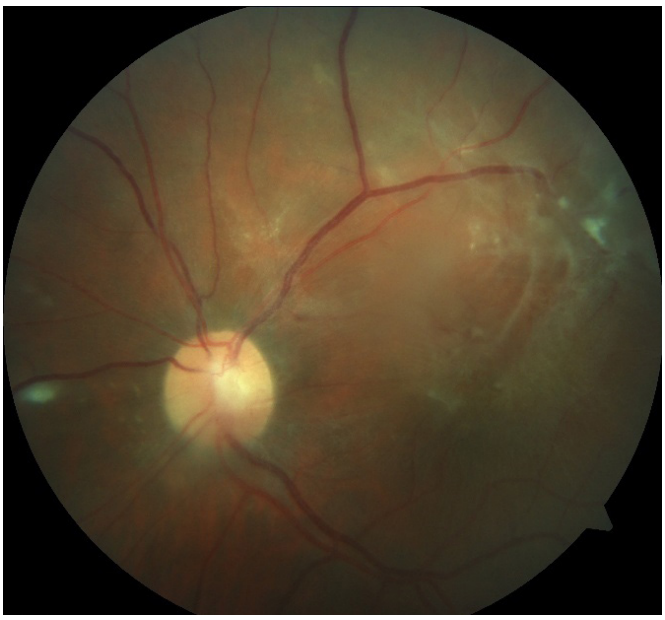

Fig. 4. Color fundus image showing fibrotic remodeling of the inflammatory lesions

Conclusion

Mycoplasma pneumoniae-associated inflammation of the eye's posterior pole may be a rare encounter but it is very important to be taken into account as a differential diagnosis because, even rare, it can be potentially dangerous and can lead to irreversible impairment of vision, multidisciplinary assessment should be taken into consideration. The treatment should start as early as possible to shorten the infection's course and avoid any permanent complications.

Authors' contribution

AMCH (Conceptualization, Investigation, Methodology, Writing – original draft)
FV (Supervision, Investigation, Data curation)
MAB (Supervision, Methodology, Writing – review & editing, Validation)
KH (Supervision, Investigation, Data curation, Writing – review & editing)

Conflict of interest

The authors declare no financial or other conflict of interest.

References

1. Narita M. Pathogenesis of extrapulmonary manifestations of Mycoplasma pneumoniae infection with special reference to pneumonia. J Infect Chemother. 2010; 16(3):162-9.
2. Narita M. Classification of Extrapulmonary Manifestations Due to Mycoplasma pneumoniae Infection on the Basis of Possible Pathogenesis. Front Microbiol. 2016; 7:23.
3. Rodríguez BAM, Alimañy E, Vila de Armas Y, Rodríguez Preval NM. Mycoplasma pneumoniae endophthalmitis in a Cuban pediatric patient. SAGE Open Med Case Rep. 2019; 7:2050313X19827403.
4. Lai LJ, Chen VC, Yang YH, et al. Mycoplasma infection and ocular surface diseases: a nationwide cohort study. Sci Rep. 2021; 11(1):22680.
5. Rocha-Cabrera P, Cordovés-Dorta L, Lopez VL, et al. Uveitis by Mycoplasma pneumoniae in Tenerife, Canary Islands: Report of Two Cases. Journal of Clinical and Experimental Ophthalmology. 2015; 6:6.
6. Cordonnier M, Caspers-Velu LE, Jacquemin C, et al. Bilateral optic neuropathy and white dot syndrome following a mycoplasmal infection. Br J Ophthalmol. 1993; 77(10):673-6.
7. Mitrašević M, Jovanović S, Radotić F, et al. A Rare Case of Infectious Multifocal Serpiginoid Choroiditis. Acta Clin Croat. 2016; 55(4):667-670.
8. Bai X, Chen Y, Hua R. Multimodal imaging findings in a patient with bilateral panuveitis secondary to Mycoplasma pneumoniae infection. Quant Imaging Med Surg. 2023; 13(2):1232-1234.
9. Curtiss P, Melnick L, Sicco KL, Liebman TN. Mycoplasma pneumoniae, more than a lung disease. Dermatol Online J. 2018; 24(6):13030/qt8w993185.
10. Kim K, Jung S, Kim M, et al. Global Trends in the Proportion of Macrolide-Resistant Mycoplasma pneumoniae Infections: A Systematic Review and Meta-analysis. JAMA Netw Open. 2022; 5(7):e2220949.
11. Hu J, Ye Y, Chen X, et al. Insight into the Pathogenic Mechanism of Mycoplasma pneumoniae. Curr Microbiol. 2022; 80(1):14.