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Endogenous Endophthalmitis (EE) Associated with Methicillin-Sensitive Staphylococcus Aureus (MSSA)-Related Septic Arthritis: Case Report and Literature Review

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Abstract **Case Report**

Background: Endogenous endophthalmitis (EE) is a rare but serious intraocular infection caused by hematogenous dissemination of pathogens from a distant infectious focus. It represents approximately 2–6% of all cases of endophthalmitis and primarily affects immunocompromised individuals. Staphylococcus aureus, particularly methicillin-sensitive *Staphylococcus aureus* (MSSA), is a recognized but uncommon cause of EE. While EE is often associated with endocarditis, urinary tract infections, or gastrointestinal infections, its association with septic arthritis is exceedingly rare. ***Case Presentation:*** We report the first documented case in Morocco of an endogenous endophthalmitis secondary to septic arthritis in a 70-year-old diabetic male. The patient presented with a painful red eye and profound vision loss in the right eye evolving over two weeks, along with progressive swelling and pain in the left knee. Ophthalmologic examination revealed corneal ulceration, significant anterior chamber inflammation, and vitreous opacities suggestive of EE. Joint aspiration confirmed MSSA septic arthritis. Despite systemic and intravitreal antibiotic therapy, the patient's visual prognosis remained poor, with persistent vitreous opacities and loss of light perception. ***Discussion:*** Endogenous endophthalmitis due to MSSA is a rare but severe manifestation of hematogenous spread, particularly in diabetic patients. Our review of the literature identified only six previously reported cases of MSSA-associated EE, with septic arthritis being an exceptionally rare primary infection site. The outcomes of MSSA-EE remain poor despite aggressive antibiotic treatment, and early recognition is crucial for preserving vision. ***Conclusion:*** MSSA-associated endogenous endophthalmitis secondary to septic arthritis is an extremely rare but serious clinical entity. This case highlights the importance of early diagnosis and aggressive management. Given the high risk of irreversible vision loss, clinicians should maintain a high index of suspicion for EE in patients with systemic infections and ocular symptoms.

Keywords: Endogenous Endophthalmitis, Septic Arthritis, *Staphylococcus Aureus*, MSSA, Intraocular Infection, Diabetes Mellitus.

INTRODUCTION

Endogenous endophthalmitis is an intraocular infection linked to the intraocular penetration of germs by hematogenous route [1]. It is less common than exogenous endophthalmitis and represents approximately 2 to 6% of all endophthalmitis [2]. It occurs mainly in patients with a predisposing background to infections (immunodepression, diabetes, heart disease, cancer, etc.) which can be life- threatening for the patient. We report the first case of EE secondary to septic arthritis in a diabetic patient caused by MMSA in Morocco.

OBSERVATION

A 70-year-old patient, diabetic for 14 years under poorly monitored insulin, with a history of non-sequel right hemiplegia dating back 14 years without documents, presented to the emergency room for a painful red eye with profound loss of vision in the right eye evolving for 2 weeks with pain. The evolution was marked 25 days before his admission by the installation of a painful swelling of the left knee evolving in a context of generalized asthenia and feverish sensations with a plantar perforating pain that went unnoticed (image 1,2).

Given the worsening of the clinical picture with the appearance of purulent secretions and pain in the right eye, the patient consulted the emergency room where an examination with ophthalmological exploration was carried out (FO and Echo mode B) objectifying a corneal ulceration with iris hernia in favor of endophthalmitis.

Ophthalmologic examination of the right eye found significant palpebral edema and chemosis (image 3), visual acuity reduced to positive light perception, slit lamp examination reveals corneal edema with significant inflammation of the anterior chamber.

Osteoarticular ultrasound revealed an intra-articular effusion with mobile echogenic content. The joint puncture of the left knee showed a cloudy appearance with the absence of germs on direct examination and a positive culture for multisensitive staph aureus.

The biological assessment showed hyperleukocytosis at 12,000/mm3, polymorphonuclear neutrophils at 10,000, a C-reactive protein at 245 mg/L, a HBAC at 13.3%.

Cardiovascular examination supplemented by cardiac ultrasound did not show signs of infective endocarditis. Microbiological research was negative on the anterior chamber sample and at the blood culture level.

Blepharoplasty was performed with the patient receiving systemic treatment combining amoxicillin, clavulanic acid, gentamicin and metronidazole, as well as local treatment based on aminoglycosides and quinolones.

The diagnosis of endogenous endophthalmitis associated with septic arthritis occurring in a diabetic setting was retained.

The evolution was marked by the reduction of arthritis with normal walking without limping, the regression of orbital edema and conjunctival chemosis, the examination of the anterior segment showed a reduction of inflammation in the anterior chamber (Tyndall+), the control ocular ultrasound performed after two months showed the persistence of significant vitreous condensation, the visual prognosis was reserved with negative light perception.

We describe the case of a patient with septic arthritis due to methicillin-sensitive Staphylococcus aureus who subsequently developed unilateral endogenous endophthalmitis. To our knowledge, this is the first report of endophthalmitis following septic arthritis due to staph.

Image 1: Endophthalmitis of the right eye

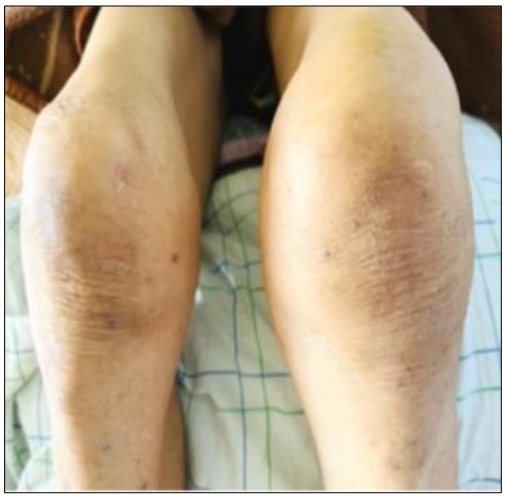

Image 2: Swelling of the left knee

Image 3: Right plantar perforating ulcer

DISCUSSION

Endogenous endophthalmitis are severe infections secondary to hematogenous intraocular seeding of a microorganism from a septic focus, mainly gastrointestinal, genitourinary or cardiac. Most endogenous endophthalmitis occurs in debilitated conditions: (immunodepression, diabetes, heart disease, cancer, etc.) Diabetes is very often an associated factor [1].

This infection can affect one eye or both, with the second eye being affected simultaneously or at a later time [3]. The most common germs are staphylococci, streptococci (pneumoniae and group B), E. Coli and mycotic agents [4].

Endogenous endophthalmitis with cutaneous origin is rare; it can be the result of surgical wound infections, erysipelas, necrotizing bacterial dermo-hypodermitis or subcutaneous abscesses [2-5]. Staphylococcus aureus is a major cause of bacteremia, which is associated with higher morbidity and mortality compared with bacteremia caused by other pathogens. The incidence of S. Aureus bacteremia and its complications has increased markedly in recent years due to the frequency of invasive procedures, the large number of immunocompromised patients, and the increasing resistance of S. aureus strains to available antibiotics [6].

In a review by Jackson *et al*., of 267 cases of endogenous endophthalmitis, the primary infectious focus was cutaneous in 20 patients [2]. In our case, endogenous endophthalmitis and septic arthritis occurred in an untreated plantar perforating ulcer in a diabetic subject. We searched the MSSA literature using MEDLINE and the reference lists of included publications to identify epidemiological studies or case reports published between 2010 and 2023 in English, using the following search terms: endogenous endophthalmitis, MSSA. However, we were able to identify only 8 eyes among 6 cases of MMSAEE (methicillin-sensitive staph aureus endogenous endocarditis), including our current case (Table 1) [7–10].

The median age of cases was 54.5 years (range 22–71 years). Of the 6 cases of MMSAEE reported in the literature, 4 (67%) were female, 5 (83%) had unilateral endophthalmitis, and 2 (17%) had bilateral endophthalmitis. Three cases (50%) had underlying diseases, including two patients with diabetes, including our current case, but 3 cases (50%) were previously healthy patients. No cases of immunodeficiency were reported. Primary foci of extraocular infection included: pyogenic vertebral osteomyelitis (2 cases), septic arthritis (1 case), tenosynovitis (1 case), puerperal mastitis (1 case), and unknown cause (1 case). All patients received intravenous antibiotics; 5 patients received ocular antibiotics. Only 1 case (16.6%) underwent vitrectomy. Of the 8 eyes of the 6 cases, 2 eyes (33.3%) had poor visual outcomes, including loss of light perception. Six eyes showed complete recovery and had good visual outcomes.

Table 1: Clinical features of cases of endogenous endophthalmitis caused by staph in the literature

Case	Age	Sex	Infection side (eye)	Comorbidities	Extraocular infection	Traitement			Evolution	Reference
						ATB intravenously	intraocular ATB	vitrectomy		
1	70	M	right	Diabetes	Septic Arthritis/ plantar perforating ulcer	amoxicillin clavulanic acid +gentamicin +métronidazole	aminoglycosides +quinolones	no	PPL	*
2	64	F	bilateral	Diabetes	tenosynovitis	Cloxacillin	Vancomycin + ceftazidine	no	PL	7
3	71	F	right	no	Pyogenic vertebral osteomyelitis (cervical)	Ceftriaxone+ teicoplanin	no	no	PL	8
4	65	M	left	no	Pyogenic vertebral osteomyelitis (dorsolumbar)	Vancomycin+ gentamycin	vancomycin	no	PL	8
5	65	F	left	uveitis	Unidentified	ciprofloxacin	Vancomycin + ceftazidine	yes	PL	9
6	22	F	right	no	Puerperal mastitis	amoxicillin clavulanic acid	Vancomycin + ceftazidine	no	PPL	10

F: female; M: male; PPL: no light perception; LP: light perception; *our case

The results of our literature search show that MSSAEE can occur in immunocompetent subjects and more likely in women. Regarding risk factors for EE, the following underlying conditions are considered: intravenous drug abuse, genitourinary infections, diabetes mellitus, immunosuppression, and in-place catheters [11]. Common extraocular coinfections of EE include liver abscess, pneumonia, endocarditis, soft tissue infection, urinary tract infection, and septic arthritis.

Except for our case, no patient with MSSAEE secondary to septic arthritis has been reported previously.

The prognosis of endogenous endophthalmitis remains poor, even with aggressive treatment. To date, there are no clear therapeutic recommendations, particularly regarding the indications for vitrectomy. Classical treatment is based on the combination of intravenous and intravitreal injections of broad-spectrum antibiotics. The three main prognostic factors are the virulence of the germ, the immune status of the host and the speed of introduction of treatment [2].

CONCLUSION

MSSAEE secondary to septic arthritis is a very rare clinical presentation of invasive Staphylococcus aureus infection, but can occur in previously healthy patients; the visual outcome is considerably poor. Importantly, early diagnosis and aggressive therapy with combined antibiotic treatment and vitrectomy can improve the clinical outcome.

BIBLIOGRAPHY

1. Cornut PL, Chiquet C. Endogenous bacterial endophthalmitis. *J Fr Ophthalmol*. 2011;34(1):51-7.
2. Jackson TL, Eykyn SJ, Graham EM, Stanford MR. Endogenous bacterial endophthalmitis: a 17-year prospective series and review of 267 reported cases. *Surv Ophthalmol*. 2003;48(4):403-23.
3. Okada AA, Johnson RP, Liles WC, D'Amico DJ, Baker AS. Endogenous bacterial endophthalmitis: report of a ten-year retrospective study. *Ophthalmology*. 1994;101(5):832-8.
4. Dariel R, Froussart-Maille F, Le Duc C, Le Maitre C, Crepy P, Maille M. Endogenous endophthalmitis and diabetic foot infection. *Diabetes Metab*. 2009;35(1):90-2.
5. Ing EB, Erasmus MJ, Chisholm LD. Metastatic group B streptococcal endophthalmitis from a cutaneous foot ulcer. *Can J Ophthalmol*. 1993;28(5):238-40.
6. Naber CK. Staphylococcus aureus bacteremia: epidemiology, pathophysiology and management strategies. *Clin Infect Dis*. 2009;48(2):231-7.
7. Agrawal RV, Teoh SC, Yong V. Bilateral endogenous endophthalmitis associated with methicillin-sensitive Staphylococcus aureus (MSSA) related tenosynovitis: case report. *Ocul Immunol Inflamm*. 2012;20(3):224-6.
8. Steeples LR, Jones NP. Staphylococcal endogenous endophthalmitis in association with pyogenic vertebral osteomyelitis. *Eye (Lond)*. 2016;30(1):152-5.

9. Ranjan P, Joshi P, Gupta M. Staphylococcus aureus induced endogenous endophthalmitis with pink hypopyon. *Ocul Immunol Inflamm*. 2016;24(4):1-2.
10. Singh SR, Bhattacharyya A, Dogra MR, Singh R, Dogra M. Endogenous endophthalmitis due to Staphylococcus aureus in a lactating woman. *Indian J Ophthalmol*. 2020;68(11):2595-7.
11. Connell PP, O'Neill EC, Fabinyi D, Islam FM, Buttery R, McCombe M, *et al.*, Endogenous endophthalmitis: 10-year experience at a tertiary referral center. *Eye (Lond)*. 2011;25(1):66-72.