# Endogenous Endophthalmitis in Myelodysplastic Syndrome: A Presentation with Streptococcus Dysgalactiae and Infective Endocarditis - A Case Report and Literature Review

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## INTRODUCTION

- Myelodysplasia, often underestimated as a risk factor, intersects with uncommon presentations of endogenous endophthalmitis.
- Notably, Streptococcus dysgalactiae's absence from recognized causative agents, alongside its atypical association with myelodysplasia, underscores the complexity of this clinical scenario.
- This observation challenges existing paradigms, highlighting the need for further exploration into the interplay of risk factors and pathogens in endophthalmitis

## THE CASE

### PRESENTATION

- A 56-year-old male presented with acute, painful vision loss in the left eye, along with blood and green discharge in the left eye.
- During examination, periorbital swelling, proptosis, bilateral upper lid edema, positive relative afferent pupillary defect, no perception of light on visual acuity, corneal staining, and elevated intraocular pressure were noted.

### MEDICAL BACKGROUND

- Diagnosed with myelodysplasia and pancytopenia, the patient frequently experiences severe infections, including pneumonia and pyomyositis, primarily due to Streptococcus dysgalactiae.
- His condition is complicated by other significant health issues like urinary tract infections and pulmonary nodules.
- Treatment includes erythropoietin (EPO) therapy and supplements, with a lifestyle marked by smoking and occasional cannabis use.

### INVESTIGATIONS

- Blood tests revealed leukopenia (WBC: 2.5 x 10^9/L), anemia (Hb: 7.5 g/dL), thrombocytopenia (Plt: 158 x 10^9/L), and markedly elevated CRP (268 mg/L).
- Low potassium and sodium levels were also noted.
- Optical coherence tomography (OCT) failed to image the left eye.
- Streptococcus dysgalactiae was isolated from vitreous humor and synovial fluid.
- MRI displayed ocular and orbital inflammation.

### INITIAL MANAGEMENT

- The patient initially received a comprehensive ocular regimen, including prednisolone, apraclonidine, dorzolamide-timolol, and chloramphenicol eye drops, alongside intravenous acetazolamide.
- Systemic therapy comprised intravenous cefotaxime and vancomycin, with additional intravitreal injections. Blood transfusion and heparin prophylaxis were also administered.
- Despite treatment adjustments, including switching to benzylpenicillin and dexamethasone eye drops, along with oral prednisolone, the left eye condition deteriorated.

### DEFINITIVE DIAGNOSIS AND TREATMENT

- Given the patient's poor prognosis and ineligibility for vitrectomy, a six-week course of antibiotic therapy was initiated, followed by outpatient parenteral antimicrobial therapy (OPAT) with ceftriaxone.
- However, during the third week, a dual diastolic murmur was noted, leading to the diagnosis of infective endocarditis with severe aortic regurgitation.
- Urgent aortic valve replacement surgery was performed, while ocular treatment continued.
- The left eye remained without light perception and ongoing pain, prompting the decision for eye enucleation, successfully performed with implantation of an ocular prosthesis.

## METHODS

- A systematic search was performed on PubMed, utilizing the search phrases "endophthalmitis myelodysplastic," "endophthalmitis dysgalactiae," "endophthalmitis myelodysplasia," "dysgalactiae myelodysplasia," and "dysgalactiae myelodysplastic."
- This approach identified 12 relevant articles.
- Three articles centred on exogenous endophthalmitis were subsequently removed from consideration.

## RESULTS

Table 1: Matrix of Search Results: Number of Papers by Search Phrases

| | Myelodysplasia | Myelodysplastic | Dysgalactiae |
|---|---|---|---|
| **Endophthalmitis** | 2 | 0 | 6/9* |
| **Dysgalactiae** | 0 | 1 | NA |

** Out of 9 total papers found, 6 were included after excluding 3 due to an exogenous source of endophthalmitis.*

Table 2: Reported Risk Factors in the Literature for Endogenous Endophthalmitis Caused by Streptococcus dysgalactiae

| Study Reference | Risk Factor(s) |
|---|---|
| Yung et al., 2019 | - Diabetes<br>- Chemotherapy<br>- Radiotherapy<br>- Metastatic squamous cell carcinoma with metastases to the head and neck lymph nodes |
| Hagiya et al., 2018 | - Prosthetic Valve |
| Wickramasinghe & Harris, 2010 | - Prosthetic Valve |
| Rapoport et al., 2022 | - Chemotherapy |
| Sobol et al., 2020 | - Metastatic lung cancer<br>- erlotinib |
| Suemori et al., 2010 | - Uterine Cancer |

Table 3: Organisms Identified in Myelodysplasia Patients with Endogenous Endophthalmitis

| Study Reference | Organism(s) |
|---|---|
| Wang et al., 2023 | - Aspergillus thermomutatus |
| Kao et al., 2023 | - Fusarium species |

Table 4: Infection Types in Myelodysplasia Patients with Streptococcus dysgalactiae

| Study Reference | Type of Infection(s) |
|---|---|
| Bay et al., 2009 | - Fatal septic transfusion reaction |

## DISCUSSION

- The discussion underscores the rarity of endogenous endophthalmitis in myelodysplastic syndrome, particularly caused by Streptococcus dysgalactiae.
- It highlights the gap in recognizing myelodysplasia as a significant risk factor for this condition.
- Despite established risk factors for Streptococcus dysgalactiae infections, myelodysplasia is notably absent among them, indicating a complex interplay of factors.
- The immunocompromised state post-transplantation may contribute more significantly to endophthalmitis in myelodysplasia patients.
- Clinicians must remain vigilant for atypical pathogens in such cases to prevent serious visual complications.
- Early recognition and management are crucial for preserving vision in these complex clinical scenarios.

## REFRENCES

Bay, J. -O. *et al.* (2009) 'A near fatal septic transfusion reaction due to *streptococcus dysgalactiae* subspecies *equisimilis* calls for novel safety measures', *Vox Sanguinis*, 96(3), pp. 271–271. doi:10.1111/j.1423-0410.2008.001150.x.
Brandt, C.M. and Spellerberg, B. (2009) 'Human infections due to*streptococcus dysgalactiae*subspecies*equisimilis*', *Clinical Infectious Diseases*, 49(5), pp. 766–772. doi:10.1086/605085.
Hagiya, H. *et al.* (2018) 'Panophthalmitis caused by streptococcus dysgalactiae subsp. equisimilis: A case report and literature review', *Journal of Infection and Chemotherapy*, 24(11), pp. 936–940. doi:10.1016/j.jiac.2018.04.012.
Kao, A.S. *et al.* (2023) 'Endophthalmitis as the initial manifestation of invasive fusariosis in an allogeneic stem cell transplant patient: A case report', *Medical Mycology Case Reports*, 40, pp. 5–7. doi:10.1016/j.mmcr.2023.02.004.
Nevanlinna, V. *et al.* (2023) 'Major risk factors for streptococcus dysgalactiae subsp. equisimilis bacteremia: A population-based study', *BMC Infectious Diseases*, 23(1). doi:10.1186/s12879-023-07992-9.
Rapoport, E.A. *et al.* (2022) 'Rare case of bilateral blindness caused by*streptococcus dysgalactiae*SPP*equisimilis*endophthalmitis in the setting of meningitis', *BMJ Case Reports*, 15(12). doi:10.1136/bcr-2022-251939.
Sobol, E.K. *et al.* (2020) 'Rapidly progressive streptococcus dysgalactiae corneal ulceration associated with erlotinib use in stage IV lung cancer', *American Journal of Ophthalmology Case Reports*, 18, p. 100630. doi:10.1016/j.ajoc.2020.100630.
Suemori, S. *et al.* (2010) 'Case of endogenous endophthalmitis caused by streptococcus equisimilis', *Clinical Ophthalmology*, p. 917. doi:10.2147/opth.s10900.
Toma, A. *et al.* (2012) 'Infections in myelodysplastic syndromes', *Haematologica*, 97(10), pp. 1459–1470. doi:10.3324/haematol.2012.063420.
Wang, X., Li, J. and He, P. (2023) 'Endogenous *aspergillus thermomutatus* endophthalmitis in a patient with myelodysplastic syndrome', *JAMA Ophthalmology*, 141(7). doi:10.1001/jamaophthalmol.2023.0590.
Wickramasinghe, N. and Harris, K. (2010) 'Bilateral endophthalmitis as a primary manifestation of streptococcus dysgalactiae endocarditis and the role of 16S rdna polymerase chain reaction in identification', *Diagnostic Microbiology and Infectious Disease*, 67(2), pp. 185–187. doi:10.1016/j.diagmicrobio.2010.01.008.
Xie, C.A. *et al.* (2022) 'Endogenous endophthalmitis - A major review', *Ocular Immunology and Inflammation*, 31(7), pp. 1362–1385. doi:10.1080/09273948.2022.2126863.
Yong, A.S.-M. *et al.* (2012) 'Streptococcus dysgalactiae endocarditis presenting as acute endophthalmitis', *Infectious Disease Reports*, 4(1). doi:10.4081/idr.2012.e16.
Yung, L., Rashid, M. and Bräu, N. (2019) 'Group C streptococcus dysgalactiae subsp.equisimilis (SDSE) endocarditis with endogenous endophthalmitis and aortic root abscess', *IDCases*, 15. doi:10.1016/j.idcr.2019.e00513.