· Case report ·

Bilateral endogenous endophthalmitis in a young immunocompetent lady with septic arthritis

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Abstract

• A 20-year-old healthy lady was admitted for septic arthritis in the right knee. Two weeks after the onset of joint pain, she complained progressive blurring of vision in both eyes. Slit-lamp examination revealed evidence of inflammation in both anterior and posterior segments. There were multiple chorioretinal lesions on both fundi. Synovial fluid aspiration of the right knee and blood culture grew *Staphylococcus aureus*. She responded well to topical and systemic antibiotics. Her final visual acuity was 6/6 in both eyes. This case illustrates a rare presentation of bilateral endogenous endophthalmitis in an immunocompetent young patient presenting with a concurrent septic arthritis. Early diagnosis and a prompt management carry a favorable visual prognosis.

• KEYWORDS: septic arthritis; endogenous endophthalmitis; immunocompetent

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INTRODUCTION

Endogenous endophthalmitis is relatively a rare condition but carries severe and potentially blinding ocular infection. It is caused by a variety of infectious agents, namely bacteria or fungal that reaches the eye from the primary site via a haematogenous spread. Meningitis, endocarditis, infection of urinary or gastrointestinal tract and wound are the most common causes of endogenous endophthalmitis, while other less common source includes pharyngitis, pneumonia, pyelonephritis and intraabdominal abscess [1]. Septic arthritis is an uncommon primary source of infection [2]. We report a case of bilateral endogenous endophthalmitis with septic arthritis of right knee as the primary source of infection in a young immunocompetent lady. Early diagnosis and prompt management is essential to preserve a favorable visual outcome in this uncommon condition.

CASE REPORT

A 20-year-old immunocompetent lady was admitted for swelling in the right knee and fever for two weeks duration. She was diagnosed as septic arthritis in the right knee and started on intravenous Cloxacillin 500mg 6 hourly and intravenous crystalline penicillin 1. 2 MU 6 hourly. She underwent synovial fluid aspiration of the right knee on the third day of admission.

One day later, she complained blurred vision in both eyes. It was associated with mild discomfort and redness. However, there was no history of trauma, skin disease, underlying medical illness or consumption of immunosuppressive medications. Visual acuity was 6/24 in both eyes. Both conjunctivas were injected. Slit-lamp examination of both anterior and posterior segments revealed moderate inflammation. There were multiple small whitish chorioretinal lesions on both fundi. Systemic examination revealed a lethargic and febrile patient. Her right knee was swollen, warm and tender in flexion position. Other joints and systemic examinations were unremarkable. There was no evidence of osteomyelitic changes or gas shadow on the X-ray of right knee. Synovial fluid aspiration of the right knee revealed numerous pus cells. Both synovial fluid and blood cultures grew *Staphylococcus aureus*. Vitreous tap and injection of intravitreal antibiotic were refused by the patient. Full blood count revealed leukocytosis with raised ESR at 91mm/first hour. Collagen screenings and other infective work-ups were negative. She was prescribed gutt ciprofloxacin 2 hourly, gutt Pred Forte 1.5% 6 hourly and gutt tropicamide 8 hourly in both eyes, and added on to intravenous ciprofloxacin 200mg 12 hourly. She showed a dramatic clinical improvement a week later (Figure 1). The intravenous antibiotics were completed for two weeks, while oral Cloxacillin was maintained for another one month. Her final visual acuity was 6/6 in both eyes.

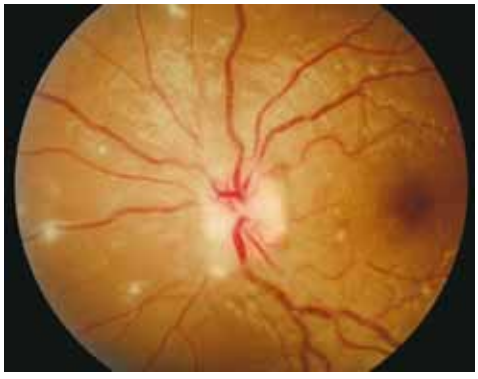

Figure 1 Multiple white chorioretinal lesions after cessation of vitritis in both eyes after one week of intravenous and topical antibiotic regimes.

Table 1 Common organisms according to the risk factors

Organisms	Risk factors
Endogenous bacterial endophthalmitis	
Streptococcus sp	Liver abscess, infective endocarditis, septic arthritis, newborn with meningitis, elderly with wound infection or malignancy
Staphylococcus aureus	Diabetes mellitus, renal failure, cutaneous infection, intravenous catheters
Bacillus cereus	Intravenous addictive abuser
Neissseria meningitis & Haemophilus influenzae	Meningitis
E. coli & Klebsiella	Diabetes, liver disease and urinary tract infections
Endogenous fungal endophthalmitis	
Candida	Intravenous drug user, surgery, malignancies, intravenous hyperalimenation, endovascular lines, diabetes, neutropenia, the use of broad spectrum antibiotics and immunosuppressive medication.
Aspergillous	After liver transplantation, immunosuppressed patient, intravenous drug abuser

Table 2 Summary of visual outcome in endogenous endophthalmitis related to septic arthritis reported in the literature 1996-2009

Author (year)	Age/ Gender	Predisposing illness	Eye involved	Presenting visual acuity	Source of infection	Other sites of infection	Microorganism	Final visual acuity
Rivera P *et al* (1996)	66/Female	Splenectomy >50 years				Acute infective keratitis, bacterimia, septic arthritis	*Streptococcus pneumoniae*	Evisceration
Wong *et al* (2000)	55/Male	None	One eye	Not mentioned	Septic arthritis	None	*Group B Streptococcus* (from blood culture)	No light perception
Lee and Chee (2002)	55/Male	Septic arthritis involving bilateral wrists, right shoulder and left ankle	Left eye	Light perception	Left foot abscess		*Group B Streptococcus* (blood and foot C&S) Gram positive cocci (vitreous tap)	No perception of light and became phthisical
Lee and Chee (2002)	53/Male	DM	Left eye	Light perception	Unknown	Septic arthritis of bilateral wrists, left shoulder,bilateral MCP, right MTP and left knee	*Group B Strepcococcus* (culture from blood, aqueous, vitreous and knee aspirates)	Phthisical and enucleation
Lee and Chee (2002)	82/Male	DM	Right eye	No light perception	Unknown	Septic arthritis of bilateral knee and left elbow	*Group B Streptococcus* (culture from blood and vitreous)	No perception of light and became phthisical
Lee and Chee (2002)	63/Female		Right eye	Light perception		Septic arthritis of right shoulder, knee, ankle and left wrist	*Group B Streptococcus* (culture from blood and vitreous)	No perception of light and became phthisical
Lee and Chee (2002)	67/Male		Left eye	Counting fingers	Cervical epidural abscess	Osteomyelitis	*Group B Streptococcus* (culture from blood and vitreous)	No perception of light and became phthisical
Pokharel *et al* (2004)	75/Female	None	Right eye	20/70	Bacterial endocarditis	Septic arthritis	*Streptococcus pyogenes* (blood and urine culture)	Not mentioned
Nurhamiza B *et al* (2009)	20/Female	None	Both eyes	Right eye:6/12 pH 6/9 Left eye: 6/6	Septic arthritis of right knee	None	*Staphylococcus aureus* (culture of synovial fluid aspiration and blood)	6/6 in both eyes

DISCUSSION

Septic arthritis denotes as a primary source or concomitant site of infection in endogenous endophthalmitis. It accounts 8% of endogenous endophthalmitis in 2 large case series [1,2]. Table 1 illustrates the patients' risk factors and potential microorganism causing endogenous endophthalmitis. Table 2 summarizes our MEDLINE literature search on endogenous endophthalmitis and septic arthritis from 1996 to 2009. A total of 8 patients were reported in MEDLINE literature on endogenous endophthalmitis and septic arthritis from 1996 to 2009, who fulfilled our inclusion criteria, in the past 13 years [2-5]. Of these 10 eyes, *Group B Streptococcus* was the main causative microorganism in 6 eyes (60. 0%). The remaining were *Streptococcus pyogenes* (one eye), *Streptococcus pneumonia* (one eye) and *Staphylococcus aureus* (two eyes). Our patient is the only patient who developed septic arthritis

due to a *Staphylococcus sp*. microorganism. There was no fungal etiology observed causing septic arthritis in our analysis. These patients' age ranged from 53 to 82 years old. 2 patients had diabetes mellitus and 1 patient had history of splenectomy for more than 50 years [2,4]. 7 of these patients (70.0%) presented with profound visual impairment in the affected eyes. There was a trend of poor final visual acuity in all patients infected with *Streptococcus sp*, worst in *Group B Streptococcus*. However due to small sample size, we are unable to further analyze the association between type of microorganism and final visual outcome. Our patient was the youngest patient in this analysis. She presented with moderate visual impairment but ultimately, her final visual outcome in both eyes was satisfactory. Despite early diagnosis and prompt treatment, we postulate that immunocompetent status and low virulent microorganism explain her good recovery.

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免疫功能正常青年女性脓毒性关节炎并发双侧内源性眼内炎

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摘要

收治 1 例患右膝脓毒性关节炎的 20 岁女性患者。关节疼痛发作 2wk 后,主诉两眼视力逐步模糊。裂隙灯检查发现前、后段炎症。双眼底多发脉络膜视网膜病变。右膝关节液抽吸和血培养有金黄色葡萄球菌生长。患者对局部和全身抗生素反应良好。双眼的最终视力为 6/6。这一病例显示了并发脓毒性关节炎的免疫功能正常的年轻患者呈现双侧内源性眼内炎的罕见表现。早期诊断和及时治疗带来良好的预后视力。

关键词:脓毒性关节炎;内源性眼内炎;免疫功能正常