The Complexities In Diagnosing And Treating Endophthalmitis In The Post Stem Cell Transplant Setting

Dr P. Conlon, Dr M. Creedon, Dr E. Houlihan, Dr A.M. Kelly, Dr L. Comerford, Dr S. O'Rourke, Prof E. Vandenberghe

Department of Haematology, St James' Hospital, Department of Microbiology, St James' Hospital

Background

Endogenous endophthalmitis is a rare complication of systemic infection and obtaining a microbiological diagnosis poses its challenges. We highlight that fundoscopic findings alone are insufficient in ascertaining the infective aetiology of endophthalmitis. We highlight the benefits of molecular techniques in ascertaining the causative pathogen.

Case

Our patient has a background of stage IIb refractory Hodgkin's lymphoma who was admitted to the haematology transplant ward for an allogeneic stem cell transplant (SCT). This was complicated by a Hickman line associated MSSA bacteremia on day + 8 post transplant. On day + 18 he developed blurred vision in both eyes. On examination, he had reduced visual acuity in both eyes, with the left eye worse than the right. On fundoscopy, there was evidence of bilateral Roth's spots. Following consultation with our ophthalmology colleagues the fundoscopic findings were felt to be classical of fungal endophthalmitis.

Treatment

Initially our patient completed 4 weeks of anti-staphylococcal therapy (day + 2 to day + 37 post SCT).

Following consultation with ophthalmology we commenced empiric fungal therapy high dose liposomal amphotericin B based on fundoscopic findings.

On day +37 post SCT despite 7 days of liposomal amphotericin B the fundoscopic appearance was deteriorating and our patient's vision was worsening. An intra-vitreal sample was taken for analysis and intra-vitreal amphotericin was administered.

On day +44 post SCT a vitrectomy was performed which demonstrated frank pus in the ocular chamber. A this point it was felt a bacterial aetiology was most likely.

Antimicrobial therapy was broadened to include meropenem, linezolid and liposomal amphotericin B.

Thankfully our patient made a full recovery from an endophthalmitis perspective and normal vision has been restored.

Results

Sample taken during vitrectomy was sent for pan-fungal PCR, Broad range bacterial PCR, and Staphylococcal specific PCR. Staphylococcal specific PCR returned with staphylococcus DNA detected, securing a definitive diagnosis and allowing anti-fungal therapy to be discontinued.

Day post transplant	Test	Result
D+8	Peripheral blood cultures	Methicillin sensitive *Staph. aureus*
D+8	Hickmann line blood cultures	Methicillin sensitive *Staph. aureus*
D+9	Peripheral blood culture	No growth
D+9	Hickmann line cultures	No growth
D+9	Mid stream urine	*Enterococcus faecalis*
D+22	Transoesophageal echo	No evidence of infective endocarditis
D+28	Left vitreous tap culture	No growth
D+33	Serum beta-D-glucan	<8 pg/mL
D+36	Serum galactomannan	0.0
D+44	Left vitreous tap culture	No growth
D+51	Panfungal PCR (sample taken on D+44)	DNA not detected
D+51	Candida specific PCR (sample taken on D+44)	DNA not detected
D+51	Broad range bacterial PCR (sample taken on D+44)	DNA not detected
D+51	Staphylococcal specific PCR (sample taken on D+44)	Staphylococcus DNA detected

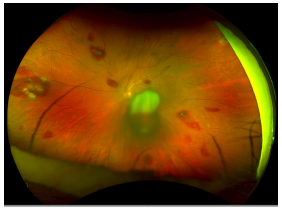
Discussion and learning points

1. Despite endophthalmitis being a rare occurrence following Staph. Aureus bacteremia it is important to maintain a high index of suspicion in the post SCT setting. Any persistent visual disturbance in this setting warrants consideration for ophthalmology input.

2. Standard of care for treatment of endogenous endophthalmitis includes systemic and intra-vitreal antibiotics. Empiric intravitreal regimes include vancomycin plus ceftazidime. Systemic antimicrobials should treat the underlying systemic infection while achieving high intravitreal concentrations. There is limited data on vitreal concentrations of antibiotics however flucloxacillin does not achieve high concentrations in animal models.

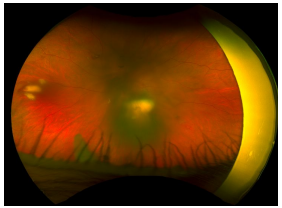
3. Involvement of microbiology or infectious disease specialists in advising on laboratory testing in these complex cases has an important role.

Fundoscopic Images



Left eye day +28 post SCT

Left eye day +28 post SCT (fluorescein contrast)



Left eye day +37 post SCT