

Post-operative Endophthalmitis

We are grateful to our colleagues from Moorfields Eye Hospital for allowing us to adapt their management guidelines for post-operative endophthalmitis.

Patient Group to which these Guidelines apply: Patients with acute bacterial endophthalmitis following intraocular surgery or intravitreal injection. Take specialist advice in non post-operative cases e.g. endogenous endophthalmitis, blebitis, trauma, keratitis with secondary intraocular infection. These forms of endophthalmitis are managed differently.

Diagnosis of presumed bacterial endophthalmitis: Endophthalmitis is suggested by the presence of pain, visual loss, lid swelling, hypopyon, vitritis and often no fundal view in the post-operative period. The diagnosis is made on clinical grounds and is followed by intraocular sampling for microbiological culture.

Get help: it is difficult to manage endophthalmitis single-handed. Inform consultant in charge of the patient if available on-site or on-call consultant if out of hours.

Sampling and intravitreal injection should take place in the minor-ops room in outpatients or on the ward out of hours and not in the intravitreal injection suite. Sampling and intravitreal injection should take place without delay following the diagnosis of post-operative endophthalmitis.

Antibiotics and instructions for preparing them for intravitreal use are found in the small fridge in theatre-recovery. When recovery is locked out-of-hours, the key is kept on Pickford ward (metal cupboard in nurses' room).

Patients presenting with suspected endophthalmitis should undergo vitreous sampling and treatment as soon as possible. Aqueous sampling may also be obtained, but the most important sample is a vitreous sample. If contacted by units outside Sussex Eye Hospital remember that the first sampling and intravitreal injections are best done locally to ensure no further delay in treatment that often occurs if patients are transferred. If necessary, these guidelines can be faxed or emailed to them. The visual prognosis often depends on the vision at first presentation and prompt treatment. If the patient does not respond to treatment then we would accept the patient at 48 hours post injection.

Management plan in brief

1. The ideal sample for microbiology will be an aqueous and vitreous sample but the most important sample is a vitreous sample. If a sample cannot be obtained (dry tap), inject antibiotics anyway and perform a paracentesis to reduce the pressure.
2. After samples have been collected, intravitreal Amikacin and Vancomycin should be administered (some surgeons prefer Ceftazidime and Vancomycin – remember that these two antibiotics will precipitate if injected through the same needle).
3. Call microbiology to let them know that samples are coming over, then call again to ensure they have arrived safely.
4. Ask microbiology to save/freeze part of the sample for future bacterial PCR (16S ribosomal PCR), should the Gram stain and culture be negative. This should be written clearly on the request form.
5. Patients should be given oral Moxifloxacin, topical steroid and antibiotic therapy. (Moxifloxacin can be started straight away – there should be a supply on Pickford ward.) Monitor LFT when starting Moxifloxacin. If LFTs are abnormal, seek Microbiological advice and consider changing to Ciprofloxacin 750mg bd.
6. Patient management is reviewed daily. In some cases, consider starting po prednisolone.
7. After 48 hours, if the inflammatory signs are improving, no further intravitreal therapy is given (eg. hypopyon, red reflex etc.) However, if the situation has either not improved, or the situation is deteriorating, further intravitreal antibiotics should be considered. It is helpful to involve the VR team early in all cases of postoperative endophthalmitis.
8. After a further 48 hours, if the inflammatory signs are better, no further intravitreal therapy is given. If the situation has not improved or is deteriorating, vitrectomy should be considered. The classical teaching from the Endophthalmitis Vitrectomy Study – that patients presenting with LP vision or worse should proceed to immediate vitrectomy – is not always appropriate, please liaise with the VR team early in such cases.

Management plan in detail

AQUEOUS AND VITREOUS SAMPLING & INTRAVITREAL ANTIBIOTIC PROCEDURE:

- 1) Instill topical anaesthetic drops
- 2) Instill aqueous Povidone-iodine 5% into the conjunctival sac and prep lid margins and periocular skin.
- 3) Administer subconjunctival or preferably subtenons anaesthetic. Intravitreal injection into an inflamed/infected eye is painful. At Sussex Eye Hospital we do not perform peribulbar anaesthesia without formal anaesthetic cover on-site.
- 4) Draw up the antibiotics as per instructions in the packs (held in theatre recovery, see above). Prepare the antibiotics prior to sampling and have them ready for injection.

Vancomycin 1.0 mg in 0.1 ml
Amikacin 0.4 mg in 0.1 ml

(Some surgeons prefer Ceftazidime instead of Amikacin)

- 5) Wash hands, wear sterile gloves and a mask
- 6) Insert the lid speculum (plastic drape not required). Thereafter do not further manipulate the eyelashes.
- 7) Wash away the excess povidone-iodine with saline
- 8) Sampling and antibiotic injection

Aqueous sampling (not essential)

Using a 1 ml syringe (not an insulin syringe) with an orange 25-gauge needle, aspirate 100-200 µl of aqueous via a limbal paracentesis. A larger needle may be used if a lot of pus is present. After removing the needle from the eye, aspirate any specimen left in the needle cannula back into the syringe, then remove the needle and replace with a red cap on the syringe. Avoid touching the tip of the syringe with gloves etc.

Vitreous sampling

Using a 5 ml syringe, a 23-gauge (blue) needle is inserted 4 mm (phakic eyes) or 3.5 mm (pseudophakic/aphakic eyes) behind the limbus into the middle of the vitreous cavity and 200-400 µl aspirated. If the eye is soft following AC sampling, some gentle counter-pressure with forceps will help get the needle through the sclera.

After the sample is taken, remove the syringe leaving the needle in the eye. Now inject the antibiotics (an assistant may be helpful to pass the antibiotic syringes). Carefully label the syringes and place into microbiology specimen bag. In the event of a dry tap, inject the antibiotics anyway. A paracentesis will probably be

required as this can lead to a significant rise in intraocular pressure (if no vitreous sample has been removed).

TREATMENT PROTOCOL

- 1) Intravitreal antibiotics: Vancomycin 1.0 mg in 0.1 ml and Amikacin 0.4 mg in 0.1 ml. (Amphotericin 5-10 ug in 0.1ml if fungi suspected, this would not normally be the case in post-operative cases.)
- 2) Oral Moxifloxacin 400mg once daily for 10 days
- 3) Arrange for baseline bloods including LFTS (for Moxifloxacin), weight, blood sugar and blood pressure measurements as patients with presumed bacterial endophthalmitis. If systemic prednisolone is considered, the dose is 1mg per kg / day to start the next day (with gastro-protection cover), remember to record weight, blood pressure and glucose as a baseline if starting prednisolone and be aware that some patients suffer acute psychological side effects from high-dose steroids. *NB: Patients with suspected fungal endophthalmitis should not be given Prednisolone.*
- 4) Topical treatment: G-Dexamethasone hourly PF and G-Chloramphenicol qds.
- 5) Keep the pupil dilated (do not prescribe atropine) and prescribe pain relief.

Every case of suspected post-operative endophthalmitis should be recorded in the book on Pickford ward. This is essential for audit purposes. Please liaise with Sister Janet Avery on the ward.