CLINICAL PRACTICE GUIDELINE: Emergency Department

Dacryocystitis

Disclaimer: This Clinical Practice Guideline ('CPG') was written for use in The Royal Victorian Eye and Ear Hospital Emergency Department. It should be used under the guidance of an Ophthalmology or ENT registrar. If clinical advice is required, please contact the Eye and Ear Admitting Officer for assistance: EYE: +61 3 9929 8033; ENT: +61 3 9929 8032. Links to internal Eye and Ear documents cannot be accessed from the website CPG.

See also: preseptal and orbital cellulitis

Description:

Dacryocystitis is inflammation of the lacrimal sac most commonly due to nasolacrimal duct (NLD) obstruction leading to stasis of tears and secondary infection.

Background:

- Most frequently presents as an acquired condition in adulthood
- Congenital nasolacrimal duct obstruction is common in infants (up to 20% of infants at birth), but dacryocystitis is extremely rare in this group. Neonates with a "dacryocystocoele" (a cystic expansion of the lacrimal sac) more often develop dacryocystitis, but the condition is very rare.
- Risk factors for acquired dacryocystitis include: increasing age, female gender, trauma, dacryolith, tumour, inflammation (e.g. granuloma)
- Common pathogens: Staphylococci, Streptococci (*S. anginosus, S. pneumonia)*, *H. Influenzae*, *Actinomyces.* Rarely: *Pseudomonas aeruginosa,* fungi

Red Flags:

- Rule out preseptal, orbital and facial cellulitis as a complication of dacryocystitis or as a differential diagnosis (rarely, dacryocystitis may be complicated by orbital cellulitis)
- Dacryocystitis in infancy is a serious disease. If not treated promptly, can result in orbital cellulitis, brain abscess, meningitis, sepsis and death

How to Assess:

History:

- Acute dacryocystitis
  - Acute onset of pain, redness and swelling overlying the lacrimal sac
  - Rule out symptoms suggestive of more serious complications such as orbital cellulitis (orbital pain, diplopia, decreased vision)
- Chronic dacryocystitis
  - Characterised by recurring episodes of epiphora or mucopurulent discharge, often but not always associated with a non-tender mass in the medial lower eyelid
  - Acute dacryocystitis may be superimposed on chronic dacrocystitis

Examination:

- Complete orbit and eye examination (both anterior and posterior)
    - Red, tender, tense mass below the medial canthal tendon.
    - Lacrimal sac abscess with fistula may be present.
    - Digital pressure over the lacrimal sac may express mucopurulent material from punctum.
    - Rule out orbital involvement: conjunctival swelling (chemosis), reduced visual acuity, relative afferent pupillary defect, pain on ocular movement, diplopia. Check for optic disc swelling on dilated exam.
    - NOTE: do not probe or irrigate lacrimal system during acute infection.
- Ophthalmic examination should be normal in uncomplicated dacryocystitis.

Differential diagnosis:

- Preseptal/orbital cellulitis
- Dacryocystocele
- Acute ethmoid sinusitis
- Infected sebaceous or epidermoid cysts
- Lacrimal sac tumour (swelling more often above medical canthal tendon), sinus or nasal cavity tumour

Investigations:

- Diagnosis is clinical in most cases
- Swab punctal discharge and send for microscopy/culture/sensitivity
    - Clean area prior to expressing discharge from sac to obtain swab to avoid excess skin flora which is non-diagnostic
- Consider CT orbits and paranasal sinuses in atypical cases or if not responding to appropriate antibiotics

Acute Management:

- Warm compresses, massage of lacrimal sac to encourage drainage of purulent material through puncta
- Chloramphenicol eye drops 4 times a day for 5 days if conjunctiva inflamed
- MILD**:** afebrile, systemically well
    - Antibiotics
        - Adults
            - Flucloxacillin 500-1000mg po (orally) 6 hourly for 5 days OR
            - Amoxicillin/Clavulanic acid-(875mg/125mg) (Augmentin Duo forte), 1 tablet 12 hourly for 5 days
        - Children
            - Flucloxacillin 12.5 mg/kg (max 500mg) po 6 hourly for 5 days OR
            - Amoxicillin/Clavulanic acid (400mg/57mg per 5mL), 22.5mg/kg of amoxicillin component (= 0.3mL/kg) 12 hourly for 5 days
    - FOLLOW UP: Acute ophthalmology clinic (AOS) 3-5 days

- MODERATE: Significant clinical signs, afebrile, systemically well
    - Admit children
    - Antibiotics
        - Adults
            - Ceftriaxone: consider single IV dose 1 gram, then oral antibiotics as above.
        - Children
            - Flucloxacillin 50 mg/kg (max 2g) intravenously (IV) 6 hourly for 5 days
    - FOLLOW UP: Adult: AOS 24-48 hours
- MODERATE-SEVERE: febrile, acutely ill
    - Admit and discuss with Infectious Disease team from St Vincent's Hospital
    - Antibiotics
        - Adult
            - Ceftriaxone 1-2 gram IV daily or in equally divided doses 12 hourly AND
            - Flucloxacillin 2 gram IV, 6 hourly
        - Children
            - Ceftriaxone 50 mg/kg/dose (max 2g) IV 12 hourly AND
            - Flucloxacillin 50 mg/kg (max 2g) IV 6 hourly
- NOTE
    - Antibiotic selection must be modified based on results of culture and sensitivity
    - For patients hypersensitive to penicillins consider infectious disease input - in particular for moderate to severe disease
    - For patients hypersensitive to penicillins (excluding immediate hypersensitivity) use:
        - Adults: Cephalexin 500-1000 mg po 6 hourly. Paediatric dose: 12.5 mg/kg (max 500 mg) 6 hourly for 5 days. If severe, ceftriaxone 1-2 gram IV daily or in equally divided doses 12 hourly for 5 days.
    - For patients with immediate hypersensitive to penicillins use:
        - Adults: Clindamycin: 450 mg po 8 hourly for 5 days. Paediatric dose: 10 mg/kg (max 450 mg) po 8 hourly (equal bioavailability IV or oral) for 5 days.
        - If severe disease, Clindamycin 600mg IV 8 hourly for 5 days.
- Continue IV antibiotics for 3 days before changing to oral if improving.

- IF NOT IMPROVING:
    - Discuss with St Vincent's Hospital Infectious Disease team
    - CT scan to evaluate for orbital cellulitis
    - Infectious disease consult: consider adding metronidazole to cover anaerobic infection, in particular if over 9 years of age.
        - Adult: Metronidazole 400 mg po 8 hourly for 5 days (if severe 500mg IV 8 hourly)
        - Children (>1 month old): 7.5 mg/kg po 8 hourly for 5 days (if severe IV)

<u>Surgical Management</u>

- Incision and drainage of abscess if pointing, or patient in severe pain, with oculoplastic clinic (OPAL) input
- Drainage of abscess can be performed under local or general anaesthesia (with OPAL input)
- OPAL referral for:
    - Dacrocystorhinostomy (DCR) after acute episode resolves, in particular with chronic dacrocystitis
        - Children:
            - If child less than 2 years old, nasolacrimal duct (NLD) probe within 1 week of resolution of acute dacrocystitis to minimise/prevent recurrence
            - If child over 2 years old, macrodacryocystogram, and possible NLD probing with stent/ balloon dilatation/dacrocystorhinostomy (DCR). Simple probe in this group has a high failure rate.

Evidence Table

Author(s)	Title	Source	Level of Evidence (I – VII)
Roy, F. H., Fraunfelder, F. W., & Fraunfelder, F. T.	Roy and Fraunfelder's current ocular therapy. Philadelphia, Pa, Saunders Elsevier 2008		IV
	Therapeutic guideline on dacryocystitis		IV
Yanoff, M., Duker, J. S., & Augsburger, J. J.	Ophthalmology. [Edinburgh], Mosby Elsevier 2009		IV
Kanski, J. J.	Clinical ophthalmology: a synopsis. Edinburgh, Butterworth-Heinemann/Elsevier 2009		IV
	Up-to-date on dacryocystitis		IV
	Australian Medical Handbook and AMH Children's Dosing Companion		IV
	St Vincent's Infectious Disease review of antibiotic management for dacryocystitis		VII

The Hierarchy of Evidence

The Hierarchy of evidence is based on summaries from the National Health and Medical Research Council (2009), the Oxford Centre for Evidence-based Medicine Levels of Evidence (2011) and Melynk and Fineout-Overholt (2011).

I) Evidence obtained from a systematic review of all relevant randomised control trials.

II) Evidence obtained from at least one well designed randomised control trial.

III) Evidence obtained from well-designed controlled trials without randomisation.

IV) Evidence obtained from well-designed cohort studies, case control studies, interrupted time series with a control group, historically controlled studies, interrupted time series without a control group or with case series.

V) Evidence obtained from systematic reviews of descriptive and qualitative studies.

VI) Evidence obtained from single descriptive and qualitative studies.

VII) Expert opinion from clinician, authorities and/or reports of expert committees or based on physiology.

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