University of Sheffield

B.Med.Sci. (Orthoptics)

Year 2 Strabismus and Ocular Motility Tutorials 2015-16

This booklet contains information required for the Strabismus and Ocular Motility academic tutorials for year 2 students. The topics to be covered in tutorials are listed, however, the order of tutorials may be changed by your tutor.

You should ensure that you prepare for the tutorials by reading your relevant lecture notes and any recommended literature. **In the event that a student is absent, the other students in the group will be expected to read any paper which had been delegated to that absent student.** Your tutor may indicate to you, in advance of the tutorial, any further preparation they require. If you have any questions, please ask your academic tutor.

Unless otherwise indicated, the articles are available online through the University library’s electronic resources: StarPlus
Overview of semester 1 tutorials

Tutorial 1  Atropine occlusion and optical penalisation
Tutorial 2  Investigation and management of exotropia
Tutorial 3  Interpretation of Hess Charts, Fields of BSV and Unicocular fields of fixation
Tutorial 4  Case discussions

Clinical placement

Overview of semester 2 tutorials

Tutorial 5  Infantile esotropia
Tutorial 6  Case discussions

Clinical placement

Tutorial 7  Incomitant case presentations with appropriate article
Tutorial 8  Aetiology of neurogenic palsies
Tutorial 1: Atropine occlusion and penalisation therapy.

You have just completed your investigation of a 3 year old patient who has amblyopia. Your patient has been wearing a low hypermetropic correction successfully for 4 months but will not tolerate the part-time occlusion (2 hours a day) prescribed for the first time at the last visit. Mum is concerned as the level of visual acuity in the amblyopic eye is 0.600 logMAR (6/24) and would like to discuss if there are any alternatives to conventional occlusion.

Please revise your notes and read the articles below to inform your discussion with your patient’s mother.


You may want to consider the following questions during your reading:

- How useful is atropine occlusion, optical penalisation and /or binocular iPad games as an initial treatment for amblyopia?
- When may atropine be suggested following conventional occlusion?
- How does compliance with atropine occlusion and binocular iPad games compare to conventional occlusion?
- What is the effect on visual acuity and visual acuity assessment whilst using atropine?
- How common are side effects / allergic reactions / adverse events / reversal of amblyopia?
Tutorial 2: Investigation and management of intermittent exotropia.

You should all read:


Please work in three groups (2 or 3 per group): Why should your form of management be selected? Convince the group! However, are there any drawbacks? You may want to consider any aspects of investigation relevant when examining your patient to form this management plan. Use the articles below to support your claims and you may also wish to perform a literature search to find other evidence to support the case.

**Occlusion**


**Minus lens therapy**


**Botulinum toxin**


Tutorial 3: Interpretation of Hess Charts, Fields of BSV and Uniocular fields of fixation

1) Look at the Hess charts below and identify the following (where appropriate):
   - The affected eye
   - Whether there is one muscle affected or a group
   - Whether the deviation is consistent with a neurogenic cause, for example is any muscle sequelae present?
   - Whether the pattern does not fit with a neurogenic palsy and may be due to a mechanical cause.

N.B. If a problem is mechanical, then the deviation may reverse in opposite directions; a ‘squashed’ appearance due to a greater defect in the outer field as the mechanical nature of the defect affects the movement more may occur; or the eyes may be affected bilaterally.

2) Examine the Fields of BSV below:
   - How do the results compare with the normal extent expected?
   - In which positions would you expect the patient to complain of diplopia?
   - How symptomatic do you think each patient will be?

3) Examine the Fields of Uniocular Fixation:
   - How do the results compare with the normal expected?
   - In which positions do there appear to be restrictions?
   - How much movement is there in the affected field and how does this compare with normal?
Patient 1:

Patient 2
Patient 3

![Diagram for Patient 3]

Patient 4

![Diagram for Patient 4]
Patient 7: Field of BSV

Patient 8: Field of BSV
Patient 9: Field of BSV
Patient 10: Left Uniocular Field of Fixation (UFOF)

Patient 11: Right UFOF
Tutorial 4: Case discussions

Please look at the case reports on the following pages.

From the information given, please prepare answers to the questions relating to each case.
Case A. 28 year old female referred by Optometrist due to complaint of diplopia when looking to the side. No significant refractive error.

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<tr>
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<tr>
<td>CT</td>
<td>c AHP</td>
<td>N v sl E c rapid rec</td>
<td>D sl E c gd rec</td>
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<td>s AHP</td>
<td>N sl E c mod rec</td>
<td>D sl+ LET</td>
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OM

Retraction of left globe on adduction with narrowing of palpebral fissure, protrusion of left globe on abduction with widening of palpebral fissure.

Frisby c AHP  55 secs of arc

PCT s AHP N 6Δ E
D 16Δ ET

Questions:

1. What further details should have been recorded under cover test, and what would you expect this detail to be?

2. From the information above, what diagnosis is most probable?

3. State the further orthoptic investigation that you would undertake and explain why.

4. Draw the expected Hess chart for this patient (see next page). Take care you label right and left eye correctly.

5. What other conditions should be considered in your differential diagnosis, and how is the differential diagnosis made?

6. If this patient started to decompensate, what surgical management options are available?
Case B: A child aged 1½ years is brought to clinic by Mother, who has noticed that one eye seems to move upwards too far – only noticed very occasionally. No refractive error present.

VA          BEO  0.1 (6/7.5)      Cardiff Cards at 1m
            Will not allow occlusion of either eye

CT           N ?min X c r/r
            D no deviation

OM

Very difficult to test. Objects to occlusion of either eye. Appears to have downdrift of RE on laevo version. Possible restriction of RE in laevoelevation.

15Δ PRT     o/c with either eye with good recovery

Questions:
1. What are the possible diagnoses that you would consider in this case?
2. What positions in your OM testing may you wish to re-examine to ensure a correct provisional diagnosis and why?
3. Mother would like to know what has caused this problem – please give an explanation, in laymen's terms, of what the problem is likely to be.
4. Mother would also like to know if an operation is necessary. What would your answer to her be?
5. Describe your management plan for this case.
Case C: 52 year old female referred to Orthoptics from casualty as presented with diplopia in up gaze. General health: Patient is diabetic, insulin dependent, and had thyroidectomy 6 years ago, now takes thyroxine. Patient wears glasses for reading.

VA s gls RE -0.02 (6/6+1) LE 0.06 (6/6pt) ETDRS

CT c readers N min X c sl LH c mod rec
D sl LH c fair rec

OM

Questions

1. This patient has two general health problems. What ocular motility problems might you expect from each? Which appears to be present?

2. What other observations may you make during the testing of ocular movements?

3. What test would you perform to record this patient’s eye movements and why?

4. What further tests would you perform to complete your investigation, and what are the possible results you would expect from each?

5. Outline your orthoptic management for this patient, giving reasons for your suggestions.
Tutorial 5: Infantile esotropia.

Please read two of the following (please ensure an even spread amongst group):


Please recap your handout and notes on infantile esotropia and dissociated vertical deviation and read the articles you have been allocated. In the Tutorial you will be divided into groups and you should be able to argue the benefits of:

- early versus late surgery
- surgery versus botulinum toxin as a primary treatment to a parent with a 5 months old baby with infantile esotropia.
Tutorial 6: Case discussions

Please look at the case reports on the following pages.

From the information given, please prepare answers to the questions relating to each case.
Case 1: Female child aged 2 years 9 months. Has been using Atropine 1% right eye twice per week, for one month, for occlusion purposes. No significant refractive error.

VA BEO 0.300 logMAR uncrowded Kays
Screamed++ with occlusion of either eye
Right pupil – dilated and not reacting to light

CT c AHP N&D No obvious manifest deviation ? straight
s AHP N&D Mod LHoT with sl L XT

AHP small chin elevation

When fixing in the distance, definitely uses chin elevation, but cover test not possible due to cooperation

OM

Slight left ptosis, about 2-3 mm

Frisby c AHP No co-operation / inconclusive

Questions

1. Consider differential diagnosis for this patient and what is the probable diagnosis for this patient?

2. What type of ptosis may be present and how would you confirm this?

3. What two reasons are there for the patient using an abnormal head posture?

4. State the test which may be performed prior to surgery and describe a suitable surgical procedure for this patient.
Case 2

A 62 year old gentleman presented with a history of worsening vertical diplopia over the previous 2 years. He complained of slight swelling around the left eye and dry eyes in the morning with slight soreness, no epiphora. The patient had reading glasses: R +1.75 L +2.00.

Examination revealed:

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<th>no deviation</th>
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OM

Ductions were full in the right eye and swelling around the upper medial lid and lower lid areas of the left eye was present. Left proptosis of 3mm was noted and left lid lag. Forced duction testing revealed ‘Tight -2 LIR’

There is more information about this case – but first have a think:

Questions

1. What is your initial impression about this patient’s diagnosis and why?

2. What further investigations regarding aetiology would you want the patient referring for?
Despite no evidence of systemic thyroid dysfunction, it was felt that the findings ‘were consistent with Graves’ orbitopathy and this diagnosis given.

The patient failed to keep follow-up appointments and was re-referred 2 years later with worsening diplopia.

An MRI scan was performed, small ischaemic changes were shown, particularly in the frontal white matter and aspirin prescribed.

However, the scan also showed a ‘diffuse mass situated superior to the globe…This is clearly not the appearance of thyroid eye disease’. A biopsy was undertaken and an orbital plexiform neurofibroma diagnosed.

**Questions**

3. What would be the expected findings on the MRI if this defect was due to Graves’ orbitopathy?

4. What is a ‘plexiform neurofibroma’?

5. What signs, at the initial visit, were indicative that this was not a case of Graves’ orbitopathy?

The patient continues to maintain BSV in the primary position and results of OM, Hess and Field of BSV show:
Shaded area = Diplopia

Questions

6. What features on the Hess chart indicate a mechanical limitation?

7. What other orthoptic test may be used to record the changes in movement of the left eye?

The patient does not find diplopia troublesome, and uses head movements to avoid areas which are diplopic. He remains under six monthly review.
Case 3

This 17 years old male presented to Eye casualty 2 days following a blow to the right eye from a fight. There was no previous history of ocular problems and he did not wear glasses. On observation, the patient had a black eye and was just able to open the eye. Orthoptic testing was limited due to pain.

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<tr>
<td>CT</td>
<td>N &amp; D</td>
<td>No deviation</td>
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Hess

Questions

1. What further information do you need to find out from the case history to help determine whether this is a fracture or soft tissue injury?

2. What other signs would indicate a fracture?

3. How would you manage this patient?
Tutorial 7: Incomitant case presentations with appropriate article.

For this tutorial you should bring along one case with an incomitant deviation seen on placement. This should be a case which has NOT been presented previously (i.e. during placement), and should NOT be the case used for reflective practice.

Please present the case to the group – stating the clinical picture, diagnosis or provisional diagnosis. Relate and / or contrast the case to an appropriate article. (Maximum 5 minutes per case including discussion).

Powerpoint will not be available unless you arrange this with your tutor.
Tutorial 8: Aetiology of neurogenic palsies

Headache and pain are symptoms which patients with neurogenic palsies may complain of. The aetiology could be one of following:

1. Diabetes
2. Idiopathic intracranial hypertension
3. Aneurysm
4. Giant cell arteritis
5. Ophthalmoplegic migraine (also known as ophthalmoplegic neuropathy)

The aim of this tutorial is for you to independently find articles for one of the above listed aetiologies and present common signs and symptoms (including pupil involvement), diagnostic methods and management of these patients. Your academic tutor will decide in advance which one of the above aetiologies you need to find a relevant article for.

Whilst searching for articles please note other aetiologies that also cause headache and painful neurogenic palsies and be prepared to discuss these at the tutorial.