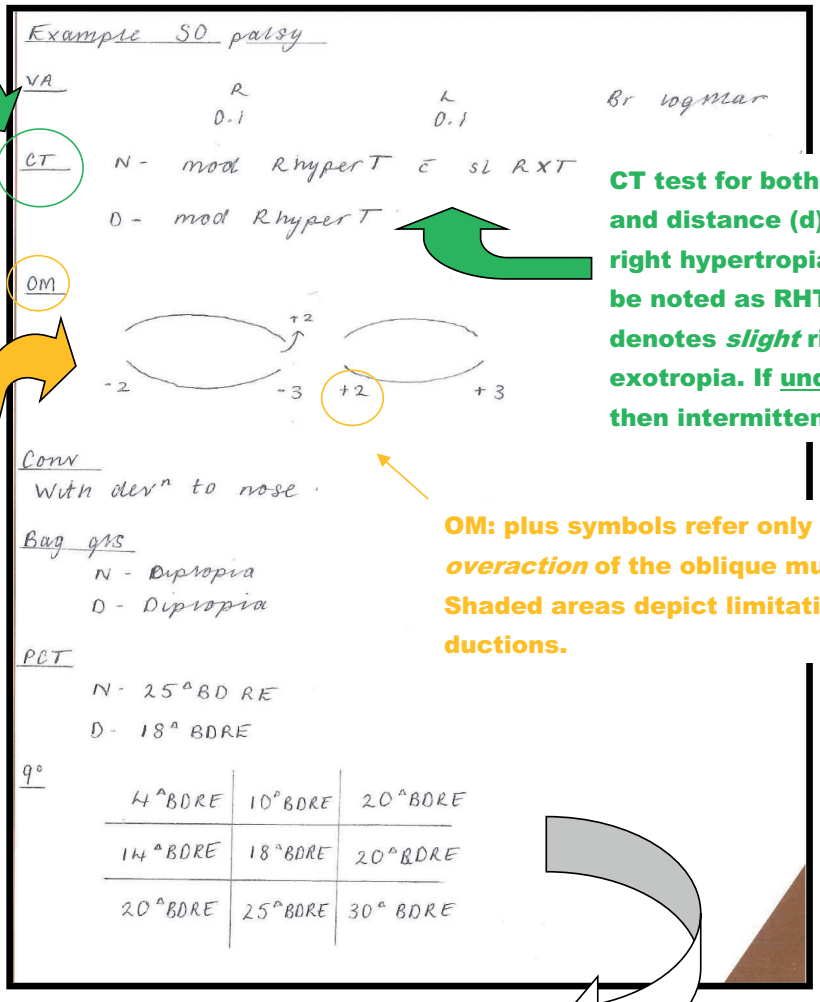
The orthoptic report – what does it all mean?

An orthoptist report may well look like a piece of Japanese Shodo, however, it does in fact contain some extremely useful information. This piece will briefly explain some of the common brush strokes seen on a report. There is some variation amongst orthoptists, however, this article will cover the diagrammatic representation of ocular movements recommended by the British and Irish Orthoptic Society. Unfortunately, there isn't scope in this article to discuss the clinical significance of the findings, so for more information please talk to your friendly departmental orthoptist.

Example 1

Cover test: identifies phorias or tropias.

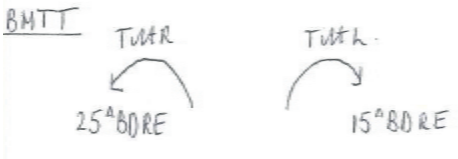
The ocular movements (OM) are shown as the patient faces the examiner. Minus symbols denote under-action of muscle with -4 indicating the eye not reaching midline. -3, -2, -1 meaning 25%, 50%, 75% of normal movement respectively.



CT test for both near (n) and distance (d). RhyperT = right hypertropia but could be noted as RHT. sl RXT denotes *slight* right exotropia. If underlined then intermittent.

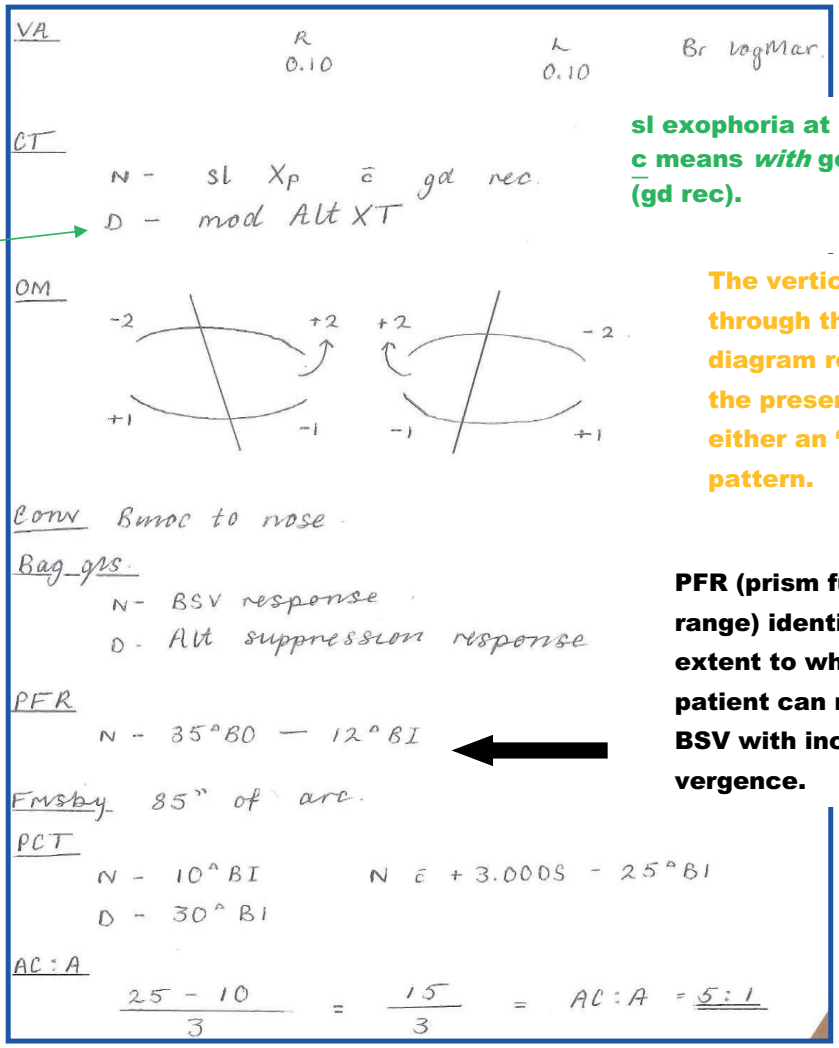
OM: plus symbols refer only to *overaction* of the oblique muscles. Shaded areas depict limitations of ductions.

PCT – prism cover test
Initially measured at near (N) (1/3 of a metre) and then in the distance (D) (6m). It is then performed in all nine positions of gaze (secondary and tertiary positions) at 6m. In this example, a right superior oblique palsy, maximum deviation is 30 prism dioptres of BD (base down) prism required to neutralise movement on laevodepression, e.g. a RHT. This reduces to 4 prism dioptres on dextroelevation.



In relation to superior oblique palsy you may also see BHTT. This shows results of the Bielschowsky's head tilt test. This helps differentiate superior oblique (SO) and superior rectus (SR) weakness. In this example, the vertical deviation increases to 25 prism dioptres when tilting the head to the right and decreases to 15 prism dioptres when tilting the head to the left. During head tilt right, the elevating action of the right superior oblique muscle is unopposed causing an increase in the right hypertropia. During head tilt left, the vertical deviation is decreased because the left superior oblique muscle is unaffected and therefore able to offset the action of the left superior rectus muscle.

Example 2



Moderate **alternating exotropia (XT).**

sl exophoria at N (Xp or X). c̄ means *with* good recovery (gd rec).

The vertical lines through the OM diagram represents the presence of either an 'A' or 'V' pattern.

Bagolini test with glasses – used to identify binocular single vision, abnormal retinal correspondence, or suppression.

PFR (prism fusion range) identifies the extent to which a patient can maintain BSV with increasing vergence.

Frisby test for stereopsis – measured in seconds (") of arc.

Three grades of binocular single vision (BSV):

1. Sensory fusion relates to Bagolini gls or Worth Lights.
2. Motor fusion relates to PFR measurements.
3. Stereopsis relates to Frisby, TNO, Lang.

AC:A – accommodation / convergence ratio

The AC:A ratio is a measure of the change in vergence driven by a change in blur. In this example, the addition of a +3.00D.S increases the horizontal deviation to 25BO. The AC:A ratio is calculated by subtracting the original PCT measurement from the measurement with the additional +3.00D.S lens and dividing it by the dioptric lens used. In this example, effect of the additional lens on vergence is clinically significant meaning conservative minus lens therapy may be considered as an alternative to surgical correction.

Summary

The first example showed a right superior oblique under-action with a right hypertropia on distant fixation measuring 18 prism dioptres and 20 dioptres on near fixation. This deviation increased to 30 prism dioptres on down / left gaze. There was a -3 under-action of the right superior oblique with +2 overaction of the right inferior oblique with updrift on left gaze shown by the arrow. The measurements in nine positions of gaze can be helpful in determining the best surgical options, in this case right inferior oblique weakening.

The second example shows an alternating distance exotropia with a V pattern of ocular movements, bilateral inferior oblique overactions and superior oblique underactions.

This short article has briefly touched on the common diagrammatic representations of ocular movements found in an orthoptic report. These can be difficult to interpret. Though not possible to discuss the clinical significance of each test, further information can be sought from your hospital orthoptist.

AUTHOR

Laura Darley,

Orthoptist, Musgrove Park Hospital, Taunton, UK.

SECTION EDITOR

Patrick Hughes,

Specialist Registrar in the Peninsula Deanery.

E: patrick.hughes4@nhs.net