

CASUALTY GIANT CELL ARTERITIS (GCA) PROTOCOL

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Casualty Giant Cell Arteritis (GCA) protocol

1.0 Aim

- To improve accuracy of diagnosis GCA and speed of appropriate treatment
- To provide guidelines concerning critical questions to ask patient, features to seek on examination and core laboratory tests

Guidelines re initial treatment:

This protocol is a guide. Whenever there is uncertainty concerning GCA discuss the patient with a senior doctor (both GCA and high dose systemic steroid therapy for the condition carry risks of adverse events including death^{1,2}).

The diagnosis of GCA requires intuition and experience to identify atypical presentations and this document cannot substitute for either.

2.0 On arrival at Eye Casualty

If a patient is suspected by the triage nurse of having GCA:

- Inform the senior doctor in the casualty for appropriate prioritisation
- Blood capillary sugar, blood pressure, temperature and urinalysis
- History and examination*
- Investigations as appropriate*
- Diagnosis*
- Action*

*see below

Ophthalmic presentations which are suggestive of GCA are anterior ischaemic optic neuropathy (AION, 88%¹⁸), central retinal arterial occlusion (CRAO, 5%¹⁸), branch retinal arteriolar occlusion (BRAO, 5%¹⁸), transient visual loss (44%¹⁵), choroidal infarction (6%¹⁸) recent cranial nerve palsy.

3.0 History

These are the *minimum* features *which must be documented* before deciding upon the diagnosis or otherwise of GCA. See Appendix 1 for guidance concerning history taking.

4.0 Symptoms

Table 1 below allows the clinician to form an impression of pre-test probability by highlighting the most important features to point to a diagnosis of GCA

Table 1

	+ve LR* (95%CI)
Ischaemic:	
Jaw claudication	4.2 (2.8–6.2)
Diplopia	3.4 (1.3–8.6)
<i>Temporal</i> headache	1.5 (0.78–3.0)
Any visual symptom [§]	1.1 (0.93–1.3)
Inflammatory response:	
Weight loss	1.3 (1.1–1.5)
Fever	1.2 (0.98–1.4)
Anorexia	1.2 (0.96–1.4)
Fatigue	1.2 (0.98–1.4)
Myalgia	0.93 (0.81–1.1)

^k50% have jaw claudication in GCA¹⁵

[§]44% have amaurosis which precedes visual loss in GCA¹⁵

*LR for +ve temporal artery biopsy JAMA. 2002;287:92–101

Screen to check for other reasons for systemic inflammatory response. These conditions if present reduce the risk of GCA being the cause of raised inflammatory markers (and systemic illness) and as such are negative risk factors for GCA:

- Urinary symptoms (frequency, dysuria, acute incontinence etc).
- Respiratory symptoms (cough, SOB etc).
- GI symptoms (diarrhoea, vomiting etc).
- ENT symptoms (sore throat, ear ache etc).
- Recent major surgery
- Known neoplasia
- Recent ischaemic event

Mean CRP post MI at ten days and ten weeks; 17.2 mg/l and 4.3 mg/l respectively, ESR at ten days and ten weeks 35.4 mm/hr and 24.3 mm/hr.²⁵

5.0 Examination

Full ophthalmic examination including:

- Optic nerve functions
 - Visual acuity
 - Relative afferent pupil defect
 - Ishihara plates
 - Fundal appearance including optic nerve appearance
- Anterior segment examination (including signs of ocular ischaemia: flare, cells, corneal oedema etc)
- Intraocular pressure
- Eye movements (including saccadic velocities)

- Superficial temporal artery. Careful examination is absolutely critical as yields the most strongly associated signs

Table 2 allows the clinician to build on the findings from the history to refine the pre-test probability of GCA

Table 2

Superficial temporal artery features	+ve Likelihood ratio(LR) ^{*7} (95%CI)
Beaded ie irregular contour	4.6 (1.1–18.4)
Prominent	4.3 (2.1–8.9)
Absent pulse	2.7 (0.55–13.4)
Tender [§]	2.6 (1.9–3.7)
Any abnormality	2.0 (0.55–13.4)

*LR for positive TAB, JAMA. 2002;287:92–101

§ Compare to adjacent scalp area not over artery

6.0 Investigations

Urgent: Verify that sample leaves department and call biochemistry (ext. 5162) and haematology (ext. 4241) to inform them of sample arrival. Leave your phone number on the blood form.

ESR

CRP

FBC

Blood pressure & Blood Capillary Sugar

Laboratory parameters	Sensitivity
ESR* >50mm/hr	0.76–0.86 ^{7, 26}
CRP>lab ref range (5mg/mL at City Hospital)	0.975 ²⁶
Raised ESR <i>and</i> CRP	0.992 ²⁶
Thrombocytosis [§]	0.57 ¹¹
Normochromic normocytic anaemia	0.44 ⁷

*upper limit of normal, men; age/2, women; (age +10)/2 (see appendix)

§see appendix

ESR is made lower by the presence of polycythaemia, NSAIDS, steroids, congestive cardiac failure, haemoglobinopathy

ESR is elevated by anaemia, malignancy, infection and inflammation

FBC: increased WCC raises suspicion of infective process/haematological malignancies

7.0 Diagnosis

Diagnostic criteria ⁶
1. Age >50 y
2. New headache
3. Temporal artery abnormality (examination finding)
4. ESR >49 mm/hr
5. Temporal artery biopsy characteristic of GCA

3 or more of these criteria give

sensitivity of 94%
specificity of 91% for GCA*.

*Amongst a study group of patients with other vasculitides

8.0 Action

If the working diagnosis is GCA URGENT action is indicated.

- 1) Inform patient and with permission and if possible inform relatives of working diagnosis. Discussion should include:
 - a. Risk to second eye of visual loss.
Involvement of the other eye occurs in 37% at a mean time of 23 days after the first eye¹⁸ (despite steroid treatment).
Of all cases of visual loss 94% occur before commencing steroid²⁰.
 - b. Visual prognosis for the presenting eye
70% 6/60 or worse¹⁸
Amongst those with visual loss 49% have unchanged vision, vision gets worse in 17%, improved in 34%¹⁸
 - c. Risks from steroids including the dangers of sudden cessation, the steroid 'card' which patients must carry.
 - d. Long term nature of follow up and steroid treatment.
Three quarters of patients are on a physiological dose of systemic steroid one year after commencement but about half experience a relapse requiring an increase in steroid dose¹⁷.
- 2) *Immediate* intravenous steroid treatment to avoid visual loss in second eye (default position should be to administer this in eye casualty) *unless contraindicated*. If in doubt re contraindications consider physician involvement urgently.

NB: Treatment should *never* be delayed by the planning of the TAB

Starting dose:

Pulsed iv 1000 mg methylprednisolone (daily for three days) for any acute cranial ischaemic complication eg AION especially if:

- a) visual loss within 24 hours
- b) or impending visual symptoms eg amaurosis but no objective optic nerve dysfunction
- c) or lost vision in second eye

Alternatively:

1–1.5 mg/kg prednisolone orally once daily (first dose *stat*).

- NB evidence shows high dose intravenous therapy (vs oral) allows a faster taper down of corticosteroid¹⁶, the visual prognosis in the affected eye is slightly better if treated with iv steroid and the risk to the other eye is less¹⁸.
- 3) *At commencing steroid* start bone-protection and gastro-protection.
 - If aged over 65 years commence alendronic acid 70 mg weekly (see Appendix 1)²² and adequate vitamin D/calcium supplementation.
 - Commence 15–30 mg lansoprazole once daily, especially if co-prescribing aspirin anti-platelet therapy²³
 - Commence anti-platelet therapy eg. aspirin 75–300 mg/day unless contraindicated
Retrospective data shows a significant reduction in ischaemic events for GCA patients on anti-platelet therapy²⁰
 - 4) Inform consultant on call and *admit to ward* for monitoring post-prandial blood capillary sugars, 4-hourly blood pressure measurement and evaluation of the need for daily systemic steroid treatment. Consider referral to a team who routinely manage these patients (eg. neuro-ophthalmology).
 - 5) Temporal artery biopsy (TAB).
 - Timing: the sooner the better. Aim to do biopsy within 3 days of presentation during routine theatre time unless prevented by conflicting clinical priorities.
Rates of TAB positivity are no less immediately after starting steroid treatment than before⁸, are less in week 2 of treatment than week 1¹⁰ but can demonstrate active arteritis beyond 45 days and 'healed' arteritis *averaging* 82 days¹⁹. 86% of biopsies performed after 4 weeks in clinically diagnosed GCA are positive²⁴.
 - Necessity: histological diagnosis is required even in the context of a clear clinical syndrome and certainly in cases of diagnostic uncertainty
 - Length: harvest *minimum* 12.5 mm³⁻⁵ *in vivo* artery length. Aim for 20 mm. Measure this with callipers and record artery length in notes and on pathology request form. Longer artery yields greater diagnostic sensitivity.
 - Aim to take the abnormal 'beaded' section of artery and document that this has been done. If the artery feels and looks normal a longer specimen is needed¹⁵.
 - 6) Ensure that the receiving on call team know about the patient to monitor re: disease control, steroid induced side effects, temporal artery biopsy scheduling etc

9.0 References

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1.0 History taking

The history is *the* most important part of the assessment for GCA. It is critical that facts are gained without leading questions.

Jaw claudication (myogenic) is specifically a pain which worsens with continued forceful chewing cf. arthrogenic pain. Patients sometimes get tongue claudication with talking and eating. This is very specific for GCA.

2.0 ESR

Taking lower values as the threshold for abnormal obviously increases sensitivity for detecting inflammatory conditions.

An alternative formula which lowers threshold (for older patients) and increases sensitivity:

	Threshold formula	Sensitivity
Miller ¹² <i>et al.</i>	Men: age/2 Women: (age +10)/2	76.5%
Hayreh ¹³ <i>et al.</i>	Men: 17.3 + (0.18 x age) Women: 22.1+ (0.18 x age)	85.7%

3.0 Thrombocytosis

Although the sensitivity of thrombocytosis (platelets >400x10³ /l) is lower than raised ESR and CRP values (according to most authors) the specificity, positive predictive value and negative predictive value of thrombocytosis are useful. Thrombocytosis therefore has a *greater* value than a raised ESR in supporting the diagnosis of GCA (as opposed to ruling it out in the context of normal values)¹⁴.

	Sensitivity	Specificity	Positive predictive value	Negative predictive value
Elevated ESR	76%	27%	54%	55%
Platelets >400x10 ³ /l	57%	91%	87%	67%

4.0 Bisphosphonate therapy

The risks are oesophageal ulceration is reduced by appropriate use.

Once weekly dose.

Tablets should be swallowed whole with plenty of water while sitting or standing; to be taken on an empty stomach at least 30 minutes before breakfast (or another oral medication); patient should stand or sit upright for at least 30 minutes after taking tablet.