Relevance of temporal artery biopsy length and shrinkage in a GCA fast track pathway

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Background

Temporal artery biopsy (TAB) is considered the gold standard investigation to diagnose Giant cell arteritis (GCA) if performed in a timely manner by experienced staff. Current BSR and BHPR guidelines state that temporal artery biopsy (TAB) specimens should be at least 10mm but ideally 20mm. This is to maximise diagnostic accuracy which could be compromised in smaller specimens due to skip lesions. Current literature caution a 10% shrinkage of TAB specimens as well as varying recommendations for an ideal specimen length based on their results[1-2]. The authors aimed to analyse the average shrinkage of TAB specimen within a sequential GCA Fast track pathway (FTP)and how the arterial length affected its sensitivity.

Methods

Prospective study of all patients referred for TAB as part of the Coventry GCA FTP from September 2016 – April 2021.

Cut arterial specimen size was measured on table after harvesting to the nearest mm. Recorded cut specimen size was then compared to the reported post fixation arterial specimen size and averages, ranges and shrinkage calculated.

Analysis also included overall sensitivity and specificity of TAB.

In addition we also analysed how the cut arterial specimen and post-fixation arterial specimen length affected the sensitivity of TAB in 5mm increments (10-14 mm, 15-19 mm, 20-24 mm, 25-29 mm, ≥ 30 mm).

Cut specimen length (mm)	n	Sensitivity (%)	Specificity (%)
10-14	1	0	0
15-19	11	71.42	100
20-24	47	33.33	100
25-29	18	53.83	100
≥ 30	11	25	100
Total	88	41.51	100

Table 1: Sensitivity of TAB in 5mm increments for cut arterial specimen

Post-fixation length (mm)	n	Sensitivity (%)	Specificity (%)
10-14	2	0	0
15-19	29	50	100
20-24	33	38.88	100
25-29	19	40	100
≥ 30	5	50	100
Total	88	41.51	100

Table 2: Sensitivity of TAB in 5mm increments for post-fixation arterial specimen

References:

1. Gordon LK, Levin LA. Visual loss in giant cell arteritis. *JAMA*. 1998;280(4): 385-6.
2. Taylor-Gjevre R, Vo M, Shukla D, Resch L. Temporal artery biopsy for giant cell arteritis. *J Rheumatol.* 2005; 32: 1279–82.
3. Mahr A, Saba M, Kambouchner M, Polivka M, Baudrimont M, Brochériou I, et al. Temporal artery biopsy for diagnosing giant cell arteritis: the longer, the better? *Ann Rheum Dis*. 2006 Jun; 65(6): 826–828.

Results

- 53 out of 88 (60%) were diagnosed with GCA, of which 22 had a positive TAB.
- All cut specimen (n=88) length were ≥ 10mm as per the BSR and BHPR recommended length.
- **Cut specimen size:**
  Mean = 23.1mm, Median = 22mm, Range of 10-36mm
- **Post-fixation specimen size:**
  Mean = 21.6mm, Median = 21mm, Range of 10-36mm
- **Average shrinkage post-fixation = 1.5mm (6.3%) (range: 0-12mm)**
- Overall sensitivity of TAB in this cohort was 41.51%
- Table 1 and 2 show the sensitivity of TAB in 5mm increments for cut and post-fixation arterial specimen
- The sensitivity was similar in all subgroups, when specimen measured 15mm or more

Discussion

The average shrinkage of TAB arterial specimen has been reported to be about 8-10%[3]. In this study the average shrinkage was similar or slightly lower.

Sensitivity was similar in all subgroups when TAB specimen length was 15mm or more. The authors therefore suggest that the cut specimen size should be at least 15mm and ideally 20mm accounting for shrinkage. A larger specimen does not give any additional benefit. This allows for a less invasive procedure whilst still maintaining a biopsy length long enough for an accurate diagnosis to be made.