

Appendix 1: Likelihood of positive temporal artery biopsy for clinical and laboratory features

Key clinical features can be correlated with the probability of a positive biopsy of the temporal artery biopsy by understanding their values as likelihood ratios (Table 1). If a symptom has a positive likelihood ratio of 3 then the odds of having the disease are 3 times greater when this symptom is present. Conversely, if a symptom has a negative likelihood ratio of 0.33 then that the odds of having the disease are 3 times lower when this symptom is absent (multiplied by a factor of 0.33). For example, a patient with jaw claudication, neck pain, weight loss and no scalp tenderness has a positive likelihood ratio of 5.62 for jaw claudication, 3.74 for neck pain and 1.59 for weight loss and a negative likelihood ratio of 0.92 for the absence of scalp tenderness (as shown in table below). These values can be multiplied to provide a value for post-test odds of 30.7 ($5.62 \times 3.74 \times 1.59 \times 0.92 = 30.7$). Odds can then be converted to a probability using the following formula: $\text{odds}/(\text{odds}+1) = \text{probability}$. If we estimate that a patient's pre-test probability of having giant cell arteritis is 50%, or odds of 1 ($1/[1+1]$), then the patient's post-test probability based on the example above would be 97% ($30.7/31.7=0.97$). In this example, it would be important to initiate treatment before the results of the biopsy are known.

Feature	Positive likelihood ratio	Negative likelihood ratio	Net swing in post-test probability*
Clinical			
Claudication of the jaw	5.62	0.57	0.49
Neck pain	3.74	0.88	0.32
Weight loss or anorexia	1.59	0.71	0.20
Tenderness of the scalp	1.71	0.92	0.15
Fever	1.62	0.88	0.15
Abnormal temporal artery	1.54	0.92	0.13
Female	1.15	0.75	0.10
Headache	1.22	0.81	0.10
Myalgia	1.11	0.96	0.04
Laboratory			
Elevated ESR and CRP	40.6	0.12	0.87
Elevated platelets	6.32	0.47	0.54

Note: CRP = C-reactive protein, ESR = erythrocyte sedimentation rate.
 *The difference in probability that a positive response gives compared with a negative response. For example, the presence of jaw claudication increases the post-test probability to 0.85 [$5.62/(5.62 + 1) = 0.36$]. The difference is 0.49. This difference, or "net swing," gives the clinician an estimate of how important each individual feature is for diagnosis.
 Values are derived from Hayreh et al.¹ and Foroozan et al.²

References

1. Hayreh SS, Podhajsky PA, Raman R, et al. Giant cell arteritis: validity and reliability of various diagnostic criteria. *Am J Ophthalmol* 1997;123:285-96.
2. Foroozan R, Danesh-Meyer H, Savino PJ et al. Thrombocytosis in patients with biopsy-proven giant cell arteritis. *Ophthalmology* 2002;109:1267-71.