The Liverpool Peritonsillar abscess Score (LPS)

Development of a predictive score through a prospective observational study

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Introduction

While uncommon in the population at large, peritonsillar abscess (PTA) is a common subject of ENT referrals. Missed or uncertain diagnosis is a source of concern for non-specialist referrers: untreated PTA can lead to multiple attendances or progress to deep neck space infections.

As a research collaborative, we aimed to develop a predictive score for the presence of PTA.

Intended benefits

1. To improve non-specialist colleagues' diagnostic certainty
2. To reduce reliance on oropharyngeal examination, which requires specialist experience
3. To support ENT surgeons' triage of emergency referrals

Method

Settings: Primary and secondary care

Sample size calculation: 10 pairs of dichotomous events per variable were needed [1] ; we estimated that five variables would be included in the model, arriving at a sample size of 100 patients.

Data: We collected comprehensive data prospectively on patients presenting with tonsillitis and PTA. Data included demographics, symptoms, signs and whether the patient had an aspiration-proven PTA or not.

Analysis: Binary logistic regression analysis; the odds ratio outputs were used in the iterative development of a predictive score while preserving relative weights; score values and the positive cut off were adjusted in light of the classification function of the current sample (internal validation).

Liverpool Peritonsillar abscess Score (LPS)

Unilateral sore throat	3
Trismus	2
Male gender	1
Pharyngeal voice change	1
Uvular deviation	1

Score <4 unlikely to have PTA

Results

100 patients were included: 46 PTA and 54 tonsillitis. With Nagelkerke R^2 = 0.887, five variables added significantly to the logistic regression model:

- unilateral sore throat (reported pain ≥80:20 split);
- trismus (mouth opening <3cm);
- male gender;
- pharyngeal voice change ('hot potato voice');
- uvular deviation (away from affected side)

Their respective odds ratios are reported below. Internal validation of the third score iteration yielded:

Sensitivity	**96%**
Specificity	85%
Positive predictive value	85%
Negative predictive value	**96%**

Variable	Odds ratio
Unilateral sore throat	462
Trismus	123
Male gender	101
Pharyngeal voice change	68
Uvular deviation	31

Conclusions

We have developed the first predictive score for PTA based on symptoms and signs that do not require the user to have specialist experience. Its high negative predictive value may be particularly helpful to non-specialist colleagues, especially where a patient does not need admission on other grounds (*eg* dysphagia). We have begun a prospective, multi-centre, external validation exercise to calibrate the score further. This will be reported at a future date.

REFERENCES

1) Peduzzi *et al.* J Clin Epidemiol. 1996;49(12):1373-9

MERC
Mersey ENT Research Collaborative

BOARS
British Otorhinolaryngology & Allied sciences Research Society

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