Fine-needle aspiration cytology in a regional head and neck cancer center: comparison with a systematic review and meta-analysis


CRD summary
This review concluded that fine-needle aspiration cytology was highly effective in the diagnosis of head and neck masses and recommended its use as an initial assessment. Poor reporting of the review process, study details and analytic methods made it impossible to assess the reliability of results. The conclusions should be viewed with caution.

Authors' objectives
To assess the accuracy of fine-needle aspiration cytology (FNAC) for the diagnosis of head and neck masses.

Searching
MEDLINE via PubMed and Cochrane Central Register of Controlled Trials were searched from inception (end dates not reported). Search terms were reported. Bibliographies of retrieved articles were reviewed to identify any additional studies.

Study selection
Diagnostic cohort studies that compared fine-needle aspiration cytology with the reference standard of histology and which reported raw data (numbers of true positives, false negatives, false positives and true negatives) for the diagnosis of head and neck masses were eligible for inclusion. Where data were not fully reported, authors were contacted and requested to provide further information. Studies of skin tumors, children, guided-image studies and studies of the complications of fine-needle aspiration cytology were excluded.

The titles of retrieved studies were screened to remove obviously irrelevant articles and full papers. The remaining studies were graded for level of evidence. The authors did not state how many reviewers were involved in this process.

Assessment of study quality
The authors did not state that they assessed validity.

Data extraction
The authors stated neither how data were extracted for the review nor how many reviewers performed the data extraction.

Data were extracted as 2x2 tables of test performance; authors were contacted for additional information if these data were not reported. Extracted data were used to calculate sensitivity, specificity, accuracy, positive predictive values and negative predictive values. Data were also extracted on the number of inadequate/non-diagnostic samples.

Methods of synthesis
Pooled estimates of sensitivity and specificity and positive predictive values and negative predictive values were calculated for all included studies and for anatomical sub-groups of lymph nodes, salivary gland, thyroid and other sites (defined as cystic neck masses and oral cavity lesions).

No details of the meta-analytic methods used were reported.

Results of the review
Thirty eight studies (3,459 samples) were included in the review. Eight studies did not report adequate data and were excluded from the meta-analysis.
The overall pooled sensitivity and specificity estimates were 89.6% and 96.5%.

Estimates of sensitivity varied according to site: 94.2% for lymph nodes; 85.5% for salivary glands; 79.7% for thyroid; and 78.7% for other sites. Estimates of specificity were similar across sites and ranged from 96.9% to 98.1%. The numbers of studies and samples on which subgroup estimates were based were not reported.

**Authors' conclusions**
Fine-needle aspiration cytology was highly effective in the diagnosis of head and neck masses, with some limitations.

**CRD commentary**
The review posed a clearly stated research question and inclusion criteria were adequately described. The search strategy used a limited number of sources and may have omitted relevant data. No attempt to identify unpublished studies was reported, so there was a possibility of publication bias. The reporting of the review process was very limited, which made it impossible to assess the potential for error and/or bias. No attempt to assess the methodological quality of included studies was reported. Similarly, no details were reported of the meta-analytic methods used to calculate summary estimates of diagnostic performance, between-study heterogeneity was not assessed and no estimates of variance were reported for these values. It was, therefore, not possible to assess whether it was appropriate to pool the available data using meta-analysis and determine whether appropriate methods were used. In view of the considerable limitations in the reporting of this review, the authors' conclusions should be viewed with caution.

**Implications of the review for practice and research**
**Practice:** The authors recommended fine-needle aspiration cytology for the initial assessment of palpable head and neck masses, but noted that it was only part of the overall evaluation and should be considered in the context of clinical findings.

**Research:** The authors stated that there was an urgent need for high-quality prospective clinical studies.

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