Positive economic and diagnostic accuracy impacts of on-site evaluation of fine needle aspiration biopsies by pathologists

Saleh H A, Khatib G

Record Status
This is a critical abstract of an economic evaluation that meets the criteria for inclusion on NHS EED. Each abstract contains a brief summary of the methods, the results and conclusions followed by a detailed critical assessment on the reliability of the study and the conclusions drawn.

Health technology
Fine needle aspiration biopsy (FNAB) with pathologist’s on-site assistance and evaluation.

Type of intervention
Diagnosis.

Economic study type
Cost-effectiveness analysis.

Study population
Patients undergoing FNAB in hospital.

Setting
Hospital. The economic study was carried out in Detroit, Michigan, USA.

Dates to which data relate
FNAB cases without pathologist’s attendance were performed from January 1992 to December 1993 and FNAB cases with pathologist’s attendance were carried out from January 1994 to December 1994. The dates for the resource use date are not reported and the price year used was not stated.

Source of effectiveness data
The effectiveness data were derived from a single retrospective study.

Link between effectiveness and cost data
The relationship between effectiveness and cost data was not clearly stated.

Study sample
The study sample contained the files of 369 FNAB cases carried out at a hospital during a three-year period. There were 227 cases of FNAB without the pathologist’s assistance and on-site evaluation and 169 cases of FNAB with such assistance and evaluation.

Study design
The study was a retrospective cohort study from a single centre. There was no report of the duration of the follow-up or the loss to follow-up.
**Analysis of effectiveness**
The analysis of clinical study was based on intention to treat. The outcomes of the study were categorized in terms of diagnostic yield as "diagnostic" or "insufficient for diagnosis", both overall and according to organ site (i.e. pancreas, liver, lung, and all others). The pathologist examined air-dried, Diff-Quik-stained smear for preliminary assessment of the aspirate.

**Effectiveness results**
In the group of FNAB cases without a pathologist 46% (104/227) were evaluated as nondiagnostic while in the FNAB cases with a pathologist 24% (40/169) were considered nondiagnostic. FNAB of the lung made up 42.7% of the former and 35.5% of the latter. The corresponding nondiagnostic figures for this site were 40% and 18%, respectively (all site categories showed the same downward trend).

**Measure of benefits used in the economic analysis**
The outcomes of the study were categorized in terms of diagnostic yield as "diagnostic" or "insufficient for diagnosis". The values of the authors and clinicians were used to analyse the health status.

**Direct costs**
Quantities of resource use were not analysed separately from the costs. The following items were included in the costing of the intervention: radiology, pathology, hospital charges, surgery. For the open/excisional biopsy under general anaesthesia, the costing included anaesthesia, operating room, surgeon and hospital, hotel and pathology with frozen section (assuming an average two- to three-day stay). 'Charges' were used to approximate costs. The price date was not stated.

**Currency**
US dollars ($).

**Sensitivity analysis**
No sensitivity analysis was performed.

**Estimated benefits used in the economic analysis**
In the group of FNAB cases without a pathologist 46% were evaluated as nondiagnostic while in the FNAB cases with a pathologist 24% were considered nondiagnostic. The benefits of the traditional open biopsy procedure were not documented. It seems, nevertheless, that the open surgical procedure would be the reference test and therefore yield the optimal diagnostic value. The side effects were not considered.

**Cost results**
The average total cost of CT-guided FNAB was about $1,400. The average total cost of excision biopsy under general anaesthesia with two-to three-day hospitalization was about $7,720.

**Synthesis of costs and benefits**
Costs and benefits were not combined.

**Authors’ conclusions**
The authors concluded that "the results of our experience indicate that on-site evaluation by a pathologist greatly increases the diagnostic yield. Another advantage is the significant financial savings as compared to excisional tissue..."
biopsy”.

CRD COMMENTARY - Selection of comparators
The justification for the choice of the comparator is clear. You should consider whether open biopsy is a widely used health technology in your own setting.

Validity of estimate of measure of benefit
The lack of an adequate control group in the clinical study might render the validity of the study results questionable.

Validity of estimate of costs
The resource quantities were not reported separately. Adequate details of the sources and methods of cost estimation were not given.

Other issues
The issue of generalisability to other settings or countries was not considered. There was no attempt to identify the critical parameters of the study and to perform sensitivity analysis. Moreover, the results were not clearly presented as an incremental analysis between the intervention (on-site evaluation of FNAB by a pathologist) and the comparator (traditional open biopsy).

Implications of the study
Further prospective, controlled studies are needed in order validly to state the cost-effectiveness of FNAB with on-site pathological evaluation relative to the standard open biopsy or FNAB without on-site evaluation by pathologists.

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