Image-guided core biopsy has advantages over needle localization biopsy for the diagnosis of nonpalpable breast cancer

Whitten T M, Wallace T W, Bird R E, Turk P S

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
Image-guided core biopsy (IGCB) in the diagnosis of nonpalpable mammographic lesions suspicious for cancer.

Type of intervention
Diagnosis.

Economic study type
Cost-effectiveness analysis.

Study population
Patients who have been evaluated for nonpalpable mammographic lesions and subsequently diagnosed with breast cancer.

Setting
Secondary care. The economic study was performed in the USA.

Dates to which data relate
Effectiveness data were collected during the period January 1994 and December 1995. The price year was not stated.

Source of effectiveness data
The evidence for outcomes was derived from a single study.

Link between effectiveness and cost data
The costing was undertaken retrospectively on the same patient sample as that used in the effectiveness study.

Study sample
The IGCB group consisted of 86 patients identified from the mammogram reports of all patients who underwent IGCB during the study period. The second group, 85 patients who underwent NLB, was identified from the mammogram reports of all patients with breast cancer treated by a group of four surgeons who preferentially use NLB. The average age of patients in the IGCB group was 60 years (range: 35 - 94 years) and in the NLB group 57 years (range: 35 - 78 years). Power calculations do not appear to have been used to determine the sample size.

Study design
This multicentre study was a nonrandomized trial with concurrent controls. It is not clear how many centres were
included in the study.

**Analysis of effectiveness**

It was not stated whether the analysis of the clinical study was based on 'intention to treat' or 'treatment completers only'. The outcomes used in the analysis were breast conservation and the volume of resection. The degree of suspicion of cancer (BIRADS final assessment categories) was similar in the two groups.

**Effectiveness results**

The breast was conserved in approximately half of the cases in both groups. Within the IGCB group, patients with microcalcifications underwent breast-conserving surgery less often than patients with mass lesions (27% and 59%). In the NLB group, the type of lesion (mass or microcalcification) made little difference in relation to breast conservation (57% and 50% breast conservation, respectively). The volume of excision was greater for patients in the IGCB group than for the NLB group: 106 cubic cm and 52 cubic cm, (p<0.0001). The 86 patients who underwent IGCB subsequently had 98 surgical procedures (1.1 operations per patient), compared with the 85 patients in the NLB group who underwent 157 surgical procedures (1.9 operations per patient).

**Clinical conclusions**

The preoperative use of IGCB for mammographically suspicious lesions can reduce the incidence of positive surgical margins and the number of surgical procedures required. The use of IGCB allows for a more efficient diagnostic workup.

**Measure of benefits used in the economic analysis**

No summary benefit measure was identified in the economic analysis and only separate outcomes were reported.

**Direct costs**

Only hospital charges were considered in the following categories: charges for radiology, anaesthesia, surgeon and hospital charges (including preoperative laboratory evaluations). Radiology charges were obtained from a charge schedule provided by the radiology billing department. Anaesthesia and surgery charges were provided by a billing clerk from each group. Hospital charges were extracted from the hospital billing system databases. The comparison did not encompass the entire treatment of cancer, because charges such as breast reconstruction and radiation therapy were highly variable and not related to the mode of diagnosis. Resource quantities were not reported separately from costs.

**Currency**

US dollars ($).

**Estimated benefits used in the economic analysis**

Not applicable.

**Cost results**

The mean charge for an IGCB was $1,101 compared with $2,975 for a NLB.

**Synthesis of costs and benefits**

Not applicable.

**Authors’ conclusions**
The study showed that the preoperative use of IGCB for mammographic lesions suspicious for cancer, especially mass lesions, can reduce the incidence of positive surgical margins and the number of surgical procedures in this subset of breast cancer patients. The benefits of this diagnostic procedure include a potential lessening of emotional trauma as well as the cost of care for these women.

**CRD COMMENTARY - Selection of comparators**
A justification was given for the comparator used: needle-localised breast biopsy (NLB). You should consider whether this is a widely used health technology in your own setting.

**Validity of estimate of measure of benefit**
No summary measure of benefit was presented and it does not appear that power calculations were used to determine the sample sizes in the study.

**Validity of estimate of costs**
Resource quantities were not reported separately from prices. Hospital charges were used as the method of cost estimation.

**Other issues**
As the study was not randomised and no sensitivity analysis was performed, the results need to be treated with some caution. Appropriate comparisons were made with other studies.

**Implications of the study**
A more reliable assessment of the relative benefits would come from a randomized controlled trial.

**Source of funding**
None stated.

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