Pelvic endometriosis: impact of magnetic resonance imaging on treatment decisions and costs

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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
Magnetic resonance imaging for patients with diagnosed pelvic endometriosis.

Type of intervention
Diagnosis.

Economic study type
Cost-effectiveness analysis.

Study population
Patients (aged 24-48 years, mean=36 years) with clinically suspected endometriosis.

Setting
Hospital. The economic study was carried out in Izumo, Japan.

Dates to which data relate
The main effectiveness data were taken from a single trial dated 1996. Resource and cost data were mainly derived from 1996 sources. Resources were measured in 1996 values.

Source of effectiveness data
Estimates of the laparoscopy or laparotomy results and MR imaging results were derived from a single trial.

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

Study sample
A cohort of 35 consecutive patients were entered into the trial. Power calculations to determine the sample size were not undertaken.

Study design
Cohort study conducted in a single centre. The duration of follow-up was not stated. There was no loss to follow-up.

Analysis of effectiveness
The analysis of the clinical study was based on intention to treat. The primary health outcomes used in the analysis were laparoscopy or laparotomy and MR imaging sensitivity, specificity and accuracy.

**Effectiveness results**

Laparoscopy or laparotomy were estimated to reveal a normal pelvis in 6 patients, surgically confirmed endometriosis in 26 patients, hematosalpingitis in 1 patient, benign cystic teratome in 1 patient and ovarian cancer with internal hemorrhage in 1 patient. A total of 52 lesions were estimated to be found in the 26 patients with endometriosis. MR images were estimated to have identified 20 endometriomas. MR imaging results were estimated to be true-negative in 7 patients and false-negative in 6 patients. The overall sensitivity, specificity and accuracy of MR imaging were 77%, 78% and 77%, respectively. The sensitivity of MR imaging, when used in conjunction with CA-125 assays, was 85%.

**Clinical conclusions**

The use of pelvic MR imaging in combination with serum CA-125 assay had good accuracy and as such decreased the number of unnecessary surgical procedures.

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

The measure of benefits were the number of invasive surgical procedures avoided and the reduction in pain and anxiety to the individual.

**Direct costs**

MR imaging, surgical procedures, hospital rooms and anesthesia, serum examination and consultations costs were included in the analysis. Quantities were analysed separately from the costs. The quantity/cost boundary adopted was the hospital. The date to which the price data refer was 1996.

**Statistical analysis of costs**

Not stated.

**Currency**

US dollars ($) and Japanese Yen. The conversion rate was Japanese Yen 85 = $1.

**Sensitivity analysis**

No sensitivity analysis was conducted.

**Estimated benefits used in the economic analysis**

The number of invasive surgical procedure avoided was 24. The reduction in pain and anxiety to the individual and the payers were not, however, quantified.

**Cost results**

The total diagnostic laparoscopy cost was estimated to be $64,589. The total abdominal surgery costs were estimated to be $15,718. The total cost for diagnosis and treatment was estimated to be $80,307. Discounting was not relevant. The total diagnostic laparoscopy cost per patient was estimated to be $1,845. The total abdominal surgery cost per patient was estimated to be $7,859. The total cost for diagnosis and treatment per patient was estimated to be $2,294. When MR imaging was performed, the total MR imaging costs were estimated to be $11,235 (Yen 6,826,120). The total diagnostic laparoscopy costs were estimated to be $44,290. The total cost for diagnosis and treatment was estimated to be $71,243. The total MR imaging cost per patient was estimated to be $321. The total diagnostic laparoscopy cost per patient was estimated to be $1,845. The total cost for diagnosis and treatment per patient was not given.
Synthesis of costs and benefits
The overall net savings were estimated to be $9,064 (Yen 770,460) or $259 (Yen 22,013) per patient. An incremental analysis was not performed.

Authors' conclusions
In patients with suspected endometriosis, the use of pelvic MR imaging in combination with serum CA-125 assay decreased the number of invasive surgical procedures and reduced total health care costs.

CRD COMMENTARY - Selection of comparators
The reason for the choice of the comparator was clear. Endometriosis is a condition in which functioning endometrial glands and stroma develop outside their normal location. MR imaging has been advocated as the technique of choice for diagnosis and evaluation of endometriosis. You, as a user of this database, should consider whether these are widely used health technologies in your setting.

Validity of estimate of measure of benefit
The estimate of measure of benefit used in the economic analysis is likely to be internally valid. The data have not been used selectively to evaluate the impact of magnetic resonance (MR) imaging compared with laparoscopy or laparotomy on decisions about treatment of patients with clinically diagnosed pelvic endometriosis and to generalize about the usefulness of the correct diagnostic technique in eliminating unnecessary costs.

Validity of estimate of costs
The resource quantities were reported separately from the prices. Adequate details of methods of quantity/cost estimation were given. Important cost items were not omitted.

Other issues
The authors' conclusions are likely to be justified, given the uncertainties in the data. The issue of generalisability to other settings/countries was not addressed and comparisons with other studies were limited. Results were not presented selectively.

Implications of the study
More research is required to quantify the reduction in pain and anxiety to the individual and the payers.

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