Usefulness of the American College of Rheumatology recommendations for liver biopsy in methotrexate-treated rheumatoid arthritis patients
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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
Using American College of Rheumatology (ACR) Monitoring and Biopsy surveillance recommendations versus revised Psoriatic Task Force (PTF) guidelines in the assessment of the risk for the development of clinically significant liver disease in methotrexate-treated rheumatoid arthritis (RA) patients.

Type of intervention
Diagnosis.

Economic study type
Cost-effectiveness analysis.

Study population
Patients with RA treated with weekly methotrexate fulfilling the ACR criteria for RA.

Setting
Hospital. The economic study was carried out in Aurora, Colorado, USA.

Dates to which data relate
The effectiveness analysis and estimation of resources used were based on patient records from the period January 1982 to December 1993. The dates of prices used were not reported.

Source of effectiveness data
Effectiveness data were 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
Power calculations were not used to determine the sample size. 112 patients started MTX treatment and, based on the prospective application of the modified FTA guidelines, 46 patients (41%) were excluded from the initial sample. ACR guidelines were applied on the remaining 66 patients (PTA cohort), who underwent a total of 110 biopsies.

Study design
This was a prospective cohort study carried out in a single centre. The actual outcomes from applying the comparator
prospectively were compared to those which would have resulted if the intervention were retrospectively applied. The duration of follow-up of the cohort varied, with the average duration for the MTX therapy being 56.2 months (SD +/- 30.6). The hepatic pathologist who reassessed patients' outcomes was blinded to the method of assessment.

**Analysis of effectiveness**
The principal (intention to treat or treatment completers only) used in the analysis of clinical outcomes was not explicitly specified. The primary health outcomes used were sensitivity, specificity and positive predictive value for identifying Roenigk grade IIIB or IV abnormalities (Roenigk classification).

**Effectiveness results**
The intervention (ACR guidelines) showed 80% sensitivity, 82% specificity and a positive predictive value of 27% in the detection of Roenigk grade IIIB or IV abnormalities. The application of the FTA resulted in the performance of 110 liver biopsies with 5 cases of abnormalities found against 18 biopsies with 4 cases of abnormalities in the case of assumed application of the ACR guidelines. The application of the ACR guidelines would have missed one patient with insulin-dependent diabetes mellitus (IDDM) whose Roenigk grade IV abnormality was detected by the application of PTF on liver biopsy.

**Clinical conclusions**
The study established the usefulness of "the new ACR guidelines for monitoring for MTX hepatotoxicity in RA patients receiving MTX" compared to the modified FTA guidelines.

**Measure of benefits used in the economic analysis**
No summary benefit measure was identified in the economic study and only separate health outcomes were reported.

**Direct costs**
Quantities were broadly reported as well as costs. Costs included were the costs of each uncomplicated liver biopsy and cost of complications (cost per subcapsular hematoma and cost per bile peritonitis). The boundary adopted was the hospital. The source for the estimation of quantities was the institution's records. The source of unitary costs was the standard costs published by a professional association (ACR). The quantity of resources was measured between 1982-1993, inclusive. Prices were not dated.

**Indirect Costs**
Not considered.

**Currency**
US dollars ($).

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

**Estimated benefits used in the economic analysis**
Not applicable.

**Cost results**
The total cost for the ACR cohort was $16,956. The corresponding figure for the PTF cohort was $111,380. The cost
savings would have been $94,424, or $1,430 per patient for this specific study sample.

**Synthesis of costs and benefits**
A synthesis of costs and benefits were not performed.

**Authors' conclusions**
The authors concluded that the "study largely supports the new ACR guidelines for monitoring for MTX hepatotoxicity in RA patients receiving MTX. These recommendations are not only useful but cost-effective. We suggest that patients with RA and insulin-dependent diabetes mellitus (IDDM) are at risk for MTX hepatotoxicity, and consideration should be given to adding IDDM to the ACR guidelines as a risk factor until further research is done in this area”.

**CRD COMMENTARY - Selection of comparators**
A justification was given for the choice of the comparator. The modified PTF guideline was used as the comparator since it was regarded as the gold standard.

**Validity of estimate of measure of benefit**
The internal validity of the effectiveness results is likely to be weakened by the absence of randomisation.

**Validity of estimate of costs**
Resource utilisation was not reported separately from the costs. Little detail was given regarding the methods of cost estimation.

**Other issues**
Given the lack of randomisation, sensitivity analysis, and statistical analysis of the costs, the results need to be treated with some caution. The issue of generalisability to other settings or countries was not addressed.

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