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Title What is the sensitivity and specificity of PET/CT compared with other diagnostic imaging modalities in determining the cause of pyrexia of unknown origin (PUO)? What is the clinical and cost effectiveness of PET/CT as a first-line investigation in patients with PUO?

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Reference Technologies scoping report 20; ISBN 1-84404-957-4;
http://www.healthcareimprovementscotland.org/our_work/technologies_and_medicines/shtg_scoping_reports/technologies_scoping_report_20.aspx

Aim

This work was undertaken in response to an enquiry from Scottish PET short-life working group. It is intended to provide an overview of the evidence base, including gaps and uncertainties, and inform decisions on the feasibility of producing an evidence review product on the topic.

Conclusions and results

1. What is the sensitivity and specificity of PET/CT compared with other diagnostic imaging modalities in determining the cause of PUO?

A moderate quality meta-analysis reported that PET/CT had a pooled sensitivity of 98.2% (95% CI 93.6 to 99.8) and specificity of 85.9% (95% CI 75.0 to 93.4%) for the detection of the cause of PUO. PET/CT was helpful in obtaining a final diagnosis in 62% of patients. Further, PET/CT showed high sensitivity for the evaluation of infection or inflammation, neoplasm and non-infectious inflammation. This meta-analysis has some limitations, which should be noted. The data on the use of PET/CT in paediatric patients with PUO are very limited, and confident conclusions cannot be drawn. Apart from one small study (from 2000) that compared PET with gallium scans, no literature was identified that compared the sensitivity and specificity of PET/CT with other diagnostic imaging modalities in determining the cause of PUO.

2. What is the clinical and cost effectiveness of PET/CT as a first-line investigation in patients with PUO?

In the studies identified, the patients had already had a thorough initial work-up. In this patient group (i.e., in those in whom other diagnostic measures had failed), the existing evidence suggests that PET/CT can help identify the cause of PUO. However, from this preliminary scope of the literature, it is not possible to confidently support or refute PET/CT as a first-line investigation in patients with PUO. It is also not possible to say, based on the evidence alone, where in the diagnostic work-up it is most appropriate.

No full economic evaluations were identified.

Immediately prior to publication of this report, a meta-analysis was published. It reported on the sensitivity (but not specificity) of FDG-PET/CT in detecting the cause of PUO. It included 15 studies, incorporating 595 patients, and reported a sensitivity of 85% (95% CI 81 to 88%).This does not change the conclusions of this report.

Given the lack of good quality clinical and economic evidence, no further work is anticipated.

Recommendations

Technologies scoping reports do not make recommendations for NHSScotland. See SHTG Advice Statement 011/13.

Methods

A systematic search of the secondary literature was carried out between 29 March–11 April 2013 to identify systematic reviews, health technology assessments, meta-analyses and other evidence-based assessments. Medline, Medline in process, Embase, Cinahl and Web of Science databases were searched for systematic reviews and meta-analyses.

Key websites were searched for guidelines, policy documents, clinical summaries and economic studies.

Further research/reviews required

n/a

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