The role of magnetic resonance imaging in targeting prostate cancer in patients with previous negative biopsies and elevated prostate-specific antigen levels

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CRD summary
This review concluded that magnetic resonance imaging and magnetic resonance spectroscopy had significant value for targeting peripheral zone prostate tumours in patients with elevated prostate-specific antigen levels and previously negative biopsies. Limitations of this review, in particular the possibility of missing studies and limited synthesis, mean that these conclusions are unlikely to be reliable.

Authors' objectives
To determine the accuracy of magnetic resonance imaging (MRI) for targeting prostate cancer in patients with previous negative prostate biopsies and persistently elevated prostate-specific antigen levels.

Searching
Databases including MEDLINE and EMBASE were searched. Search terms were reported.

Study selection
Prospective studies that assessed MRI for the diagnosis of prostate cancer in patients with previously negative prostate biopsies and persistently elevated prostate-specific antigen levels were eligible for inclusion. Studies had to include biopsy following MRI examination as the reference standard.

Included studies evaluated whole-body MRI alone or combined with magnetic resonance spectroscopy. All studies enrolled patients with a previous negative transrectal ultrasonography biopsy with at least six cores. One study excluded patients with an abnormal digital rectal examination. All studies focused only on the peripheral zone of the prostate.

The authors did not state how the papers were selected for the review, or how many reviewers performed the selection.

Assessment of study quality
The authors did not state that they assessed validity but data were extracted on blinding of clinicians taking the biopsy.

Data extraction
The authors did not state how the data were extracted for the review, or how many reviewers performed the data extraction.

Methods of synthesis
A narrative synthesis was presented.

Results of the review
Six studies (n=215 patients) were included in the review. None of the studies blinded clinicians taking the biopsies to the MRI results.

For MRI or combined MRI/magnetic resonance spectroscopy, the sensitivity for predicting positive biopsies ranged from 57 to 100%, and the specificity ranged from 44 to 96%.

Authors' conclusions
The value of endorectal magnetic resonance imaging and magnetic resonance spectroscopy in patients with elevated prostate-specific antigen levels and previous negative biopsies to target peripheral zone tumours appeared to be significant.
The review addressed a focused question, supported by clearly defined inclusion criteria. The literature search was poorly described, with only a selection of the databases searched described. There were no additional attempts to locate relevant studies or to identify unpublished studies. Therefore, it is likely that relevant studies have been missed and the review may be subject to publication bias. Details on the review process were not reported, so it was not possible to determine whether appropriate steps were taken to minimise bias and errors.

Study quality was not formally assessed, although restriction of the review to prospective diagnostic cohort studies in a defined group of patients meant that all the included studies fulfilled some relevant quality criteria for diagnostic accuracy studies. Blinding was also assessed and found to be lacking. Other possible sources of bias, in particular verification bias, were not discussed, so it is unclear whether these may have been present in the included studies. A formal statistical analysis including assessment and investigation of heterogeneity would have been more informative than the very limited narrative summary of results presented.

Given the limitations of this review, in particular the possibility of missing studies and limited synthesis, the authors’ conclusions are unlikely to be reliable.

**Implications of the review for practice and research**

**Practice:** The authors did not state any implications for practice.

**Research:** The authors stated that a comparison study and cost-benefit analysis of MRI-targeted compared to saturation biopsy in this group of patients is needed.

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