

Protein Testing in Patients With Multiple Myeloma: A Review

Context

Multiple myeloma (MM) is a cancer of plasma cells. Plasma cells are blood cells that normally produce immunoglobulins (proteins that fight infection). In MM, the cells produce too much immunoglobulin, called monoclonal (M)-proteins. There may also be immunoglobulin subunits called light chains, and other abnormal proteins.

MM occurs in about 5 to 7 people per 100,000. Survival is highly variable, ranging from months to years, so it is important to effectively monitor patients with MM.

Technology

Traditional tests that measure M-proteins include a 24-hour urine collection test, urine protein electrophoresis (UPEP), serum protein electrophoresis (SPEP), and immunofixation electrophoresis (IFE). The serum free light chain (sFLC) assay is a newer test developed in 2001.

Issue

There is an unclear benefit of monitoring proteins for guiding treatment in MM patients. Additionally, there is a lack of consensus between practitioners on protein testing frequency. A review of the clinical effectiveness and clinical utility of testing, repeat testing, as well as testing frequency for protein abnormalities, and a review of the evidence-based guidelines will help to make informed decisions about protein testing in patients with MM.

Methods

A limited literature search was conducted of key resources, and titles and abstracts of the retrieved publications were reviewed. Full-text publications were evaluated for final

article selection according to predetermined selection criteria (population, intervention, comparator, outcomes, and study designs).

Key Messages

- In MM patients, there is a lack of good quality evidence for the clinical utility of sFLC, and no current evidence (within the past five years) for UPEP or SPEP.
- No evidence was found for the effectiveness of *repeat testing* for protein abnormalities in MM patients.
- British Society for Haematology guidelines recommend:
 - using sFLC to monitor response to therapy in all patients with oligosecretory disease, nonsecretory disease, and light chain only MM.
 - monitoring asymptomatic MM patients every three months using UPEP, SPEP, and sFLC.
- These guidelines were found to have several limitations.

Results

The literature search identified 259 citations, with 5 additional articles identified from the grey literature search. After screening the abstracts, 12 studies met the criteria for inclusion in this review — 1 systematic review, 1 randomized controlled trial, 9 non-randomized studies, and 1 evidence-based guideline.

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