



North Glasgow Sector

Investigation of Myeloma – Audit of primary care requesting

Myeloma patients experience some of the longest delays in diagnosis of all cancer patients (median 163 days). Early diagnosis via GP referral is associated with improved overall survival, thus where there is a suspicion of myeloma, it is essential that all appropriate laboratory investigations are requested by primary care.

The critical hallmark of myeloma is evidence of a monoclonal protein (paraprotein) on electrophoresis of serum and/or urine. Approximately 20% of patients have light chain myeloma, in which the myeloma cells produce only light chains and no whole immunoglobulins. These are often not visible on serum protein electrophoresis and are only detected in the urine as Bence Jones protein (BJP), ie. urine free light chains.

To exclude the presence of a paraprotein, analysis of both serum and urine protein electrophoresis must be performed. Often only serum is received by the North Glasgow Biochemistry Laboratory, prompting a comment to be added to the report recommending a urine sample be sent for BJP, however it is unclear whether this is effective in altering requesting practice.

The aims of the audit were:

- To determine the percentage of myeloma screens received in the department of Clinical Biochemistry which are complete (ie. both serum and urine analysis requested).
- To assess the effectiveness of laboratory report comments recommending that the missing test be requested (where the initial request was incomplete).

Method

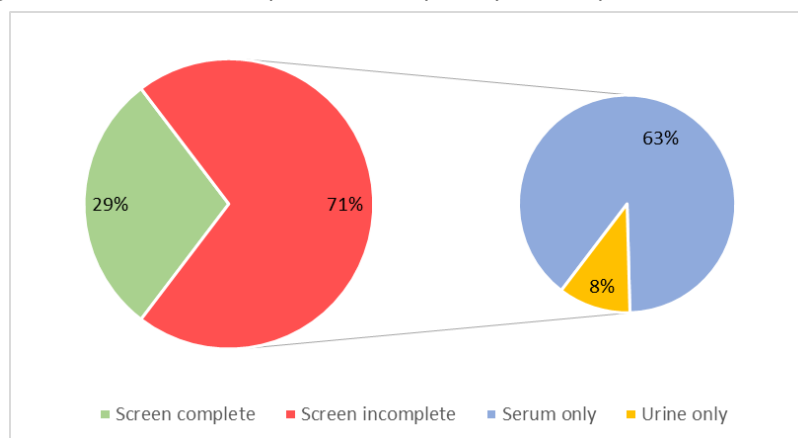
All serum and urine protein electrophoresis requests received by North Glasgow Biochemistry from primary care over a 4 week period in October 2022 were reviewed to establish whether both serum and urine had been received on each patient. Where paired samples had not been received, the biochemistry report was reviewed to determine whether a comment requesting the missing test had been made, and whether the omitted sample had been received subsequently. Requests for monitoring patients previously identified as having a paraprotein were excluded.

Results

A total of 424 samples for protein electrophoresis (303 serum and 121 urine) were received on 328 patients for investigation of possible myeloma during the audit period. Of these, paired samples were received on 96 patients ie. only 29% of all “myeloma screens” were complete (figure 1).

Comments advising further testing were made on 213 reports. Subsequently 54 samples were received. This represents a 25% response rate to report comments.

Figure 1. Percentage of complete myeloma screens received from primary care





Discussion

Requesting

Overall 71% of myeloma screen requests were incomplete, meaning the presence of a paraprotein cannot be excluded in these patients.

A “Myeloma Screen” button is available under the “Collections” tab in GP ICE (figure 2). This collection includes both serum and urine protein electrophoresis (urine BJP), in addition to other laboratory tests relevant to the investigation of myeloma and its potential complications.

General Collections
WEIGHT LOSS
TIRED ALL THE TIME (TATT)
MYELOMA SCREEN
PERIPHERAL NEUROPATHY
NEW SYNOVITIS/RA
SUSPECTED ANKYLOSING SPONDYLITIS/SPONDYLOARTHRITIS
EXCLUDE INFLAMMATORY ARTHRITIS
HEART FAILURE DIAGNOSTIC PATHWAY BLOODS

<input checked="" type="checkbox"/> Protein Electrophoresis & Immunoglobulins
<input type="checkbox"/> Urine Bence Jones Protein
<input type="checkbox"/> Full Blood Count
<input type="checkbox"/> Urea and Electrolytes
<input type="checkbox"/> Bone Profile

Figure 2. Myeloma screen collection in GP ICE

Report comments

The addition of report comments recommending the omitted test had limited effectiveness, only increasing the total percentage of complete myeloma screens from 29% to 46%.

NB. Report comments are provided on all protein electrophoresis reports. These include not only prompts for further investigation, but also clinical interpretation of results and advice on appropriate patient follow up. Providing relevant clinical details with each request can greatly assist with this.

Clinical details and other findings

Clinical details: “liver screen”

Clinical details on a number serum protein electrophoresis requests suggested the test was being requested for investigation of abnormal liver function. Protein electrophoresis is not clinically indicated for this purpose. If monitoring of immunoglobulins is required, these can be requested separately.

Clinical details: “Secondary care request”

A few requests suggested serum protein electrophoresis was requested on the advice of secondary care. Review of associated clinic letters in Clinical Portal revealed that these often suggest checking serum protein electrophoresis +/- immunoglobulins without mentioning urine BJP.

GP handbook

On review of the information provided to primary care users of the Biochemistry service, it was noted that the “Investigation of Suspected Myeloma” in the Biochemistry Handbook for Primary Care Users is out of date.

Summary of main findings

- 29% of myeloma screens were complete
- There was a poor response to advisory comments provided on biochemistry reports
- There was some inappropriate requesting (eg. “liver screen”, duplicate requesting)
- Some incomplete requesting may be due to:
 - inappropriate advice from secondary care
 - incorrect information in the GP handbook

Actions

- Contact the relevant secondary care users regarding advice on laboratory testing for myeloma
- Update and re-issue the Biochemistry Handbook for Primary Care Users

The full audit report is available on the North Glasgow biochemistry website:

[Audit of Myeloma Screen requesting in Primary Care 2023 - NHSGGC](#)