

Fenella Willis¹, Joanna Sheldon²
¹St George's University Hospitals NHS Foundation Trust,
²South West London Pathology

Aim

- To establish the appropriateness of requests for serum immunoglobulin quantification and protein electrophoresis from primary care
- To develop a guidance algorithm to improve requesting patterns.

Background

Measurement of serum immunoglobulin (IgG, IgA and IgM) concentrations and protein electrophoresis is vital in the investigation of adults with suspected B cell malignancy and immunodeficiency. These tests should only be requested when patients have relevant signs and symptoms or abnormal blood test results that indicate either condition might be present. The Myeloma UK Early Diagnosis Steering Committee and its Laboratory Best Practice Working Group in collaboration with a number of partners and stakeholders, aim to develop a guidance algorithm, which would facilitate appropriate requests for serum immunoglobulin quantification and protein electrophoresis from primary care. In turn, this will secure more appropriate referrals and timely diagnosis of myeloma and associated conditions.

Why do a Laboratory Test?

Laboratory tests should only be used:

- To include or exclude a differential diagnosis
- To monitor a disease
- To suggest a prognosis
- Certain clearly defined tests may be part of a screening process.

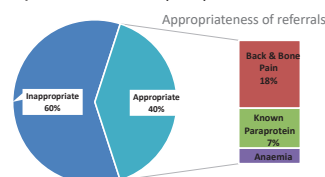
Review of Testing

The clinical details of 100 consecutive requests from primary care for IgG, IgA and IgM that were received in the laboratory over a 5 day period in February 2020, were reviewed. The requests were classified as "appropriate" if the clinical details included any of the following terms that could be associated with myeloma or immune deficiency: • anaemia • renal impairment • bone pain • raised calcium • raised ESR • raised plasma viscosity • lethargy • recurrent infections • night sweats • hyperviscosity.

Aids to Support GPs:
Myeloma Diagnostic tool

Outcome

- Only 40% of requests included any of the terms considered "appropriate" in the clinical details. The most common relevant clinical details were back/bone pain (18%), known paraproteinaemia (7%) and anaemia (5%).



- The 60% of requests that were classified as inappropriate had a variety of clinical details with abnormalities of liver function (11%) being the most common. The next most frequent group (8%) showed no clinical details.
- Other commonly seen clinical details were: diabetes, hypo/hyper thyroid, arthritis, connective tissue disease, SLE, gout, hearing loss, inflammation, personality change, bad arm, "routine" screen and *fell off bar stool!*
- Approximately 10% of "inappropriate!" requests were also repeat requests.
- A more detailed audit of repeat "inappropriate" requests revealed a range per patient of 2-19 duplicate requests and a range of 0.3 – 19 months between duplicate requests.

Relevance

- Abnormal results generated from a request that is inappropriate *may* cause increased anxiety and unnecessary investigations for patients and increased work for GPs.
- Laboratory workload is significantly increased by inappropriate requests and can delay the identification of significant abnormal results
- Tests associated with the investigation of B cell malignancy are relatively expensive:
 Immunoglobulin testing – approx. £15.00
 Urine Bence Jones protein – approx. £25.00
 Serum free light chains – approx. £40.00

Outcome

- Better management of serum protein electrophoresis requests is required in primary care to direct resources appropriately and ensure patients with significant abnormalities are detected in a timely fashion.
- Laboratory order sets for investigation of myeloma or monitoring of MGUS would help streamline investigations for patients with suspected plasma cell dyscrasias
- The development and mainstream use of a diagnostic algorithm within primary care will remain an on-going focus for the Myeloma UK Early Diagnosis Steering Committee