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654.MGUS, AMYLOIDOSIS AND OTHER NON-MYELOMA PLASMA CELL DYSCRASIAS: CLINICAL AND EPIDEMIOLOGICAL

M-Protein Analysis Test: Effects of Combining Serum Protein Electrophoresis and Free Light Chain Assay Tests into One Order

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Background:
Approximately 10-15% of clonal plasma cell disorders (PCDs, such as monoclonal gammopathy of undetermined significance or MGUS, smoldering myeloma or SMM, and multiple myeloma, MM) secrete light chains only, which are often missed on a serum protein electrophoresis (SPEP) and only detected on a serum free light chain (sFLC) or 24 hour urine (UPEP) assay. For this reason, the IMWG has recommended that screening tests for PCDs should include both an SPEP and sFLC. In 2020, clinicians at our institution were instructed to order an sFLC analysis in addition to an SPEP (with reflex immunofixation electrophoresis) when assessing for PCDs. This did not, however, appear to improve adherence to IMWG guidelines or alter screening practice. In 2021 separate orders for SPEP and sFLC were removed from the EMR and a new, combined order, called an "M-protein analysis", was implemented. We now evaluate the effect of this change in test order by comparing the data for the 12 months preceding to the 12 months after the change.
Methods:
All 1 st time SPEP and sFLC results were identified for two 12-month periods: Group A (7/1/2020- 6/30/2021) and Group B (7/1/2021-6/30/2022). Within each time frame, we also identified patients without an M-protein on SPEP but a positive sFLC which was defined as an elevated kappa or lambda free light chain and a ratio either >1.65 or <0.26 (Groups C and D, correlating with earlier and later time frames, respectively).
Groups E (pre-order change) and F (post-order change) included the subsets of sFLC positive only pts from each time frame with an sFLC ratio >3.0 or <0.26 . These more restrictive groups were chosen to minimize those with polyclonal light chain findings which may be seen in renal disease.
Results:
Group A: 4192 SPEPs, 1876 sFLCs (45% of SPEPs); Group B: 3966 SPEPs, 3966 sFLCs (100% of SPEPs)
Group C: those from A with a negative SPEP and a positive sFLC defined by an elevated kappa or lambda free light chain and a ratio either >1.65 or <0.26: 30 (1.6%) were identified.
Group D: those from B with a negative SPEP but a positive sFLC defined by an elevated kappa or lambda free light chain and a ratio either >1.65 or <0.26: 102 (2.6%) were identified.
Group E: those from A without an M-protein on SPEP but a positive sFLC defined by an elevated kappa or lambda free light chain and a ratio either >3 or <0.26: 17 (0.9%) were identified.
Group F: those from B without an M-protein on SPEP but a positive sFLC defined by an elevated kappa or lambda free light chain and a ratio either >3 or <0.26: 28 (0.7%) were identified.
For the total sFLC positive only groups (C and D): Average age= 74 (49-93); Race: 51% white, 42% AA, 7 % UK; sex: 93% male; light chain type: 91% kappa, 9% lambda; K:L ratio: med 4.5 (range 0.01-165).
For Group E (pre-order change, ratio >3 or <0.26): of the 17 cases, most were diagnosed with MGUS (10), 1 SMM and 6 with MM (all of whom were symptomatic at time of testing).
For Group F (post-order change, ratio >3 or <0.26): of the 28 cases, most were diagnosed with MGUS (23), 2 CLL, 2 SMM, 1 B-cell lymphoma and 1 with MM (who was asymptomatic at time of testing).
Overall, in the 12 months post-order change there were 2090 more sFLCs performed which identified 72 additional sFLC positive only cases (an increase of 340%).
Conclusions:
Combining the SPEP and sFLC into one order test from two separate tests improved adherence to IMWG guidelines for getting both tests ordered (from 45% to 100%). This increased the number of sFLC tests being performed but also increased

the number of PCDs diagnosed. Although most of these were MGUS, early detection of this diagnosis has been suggested in other studies to result in closer follow-up and better outcomes. In addition, in our series there was a case of asymptomatic MM which would have been missed and diagnosis delayed if just an SPEP had been ordered. M-protein analysis should be considered as a combined screening test order at other institutions.

Disclosures No relevant conflicts of interest to declare.

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