Reconsidering Routine Coagulation Testing Prior to Imaging Guided Intervention

The Problem
The Musculoskeletal (MSK) Imaging department at BIDMC is a high volume center performing daily imaging guided interventions. Routine use of pre-procedure coagulation testing was identified as a source of excess cost, delay to patient care, and interruption to daily workflow.

- Referring clinicians had to be contacted to place coagulation orders
- Patients had to come for testing on a separate day or early on the day of the procedure leading to delays in care and increased cost
- Nearly $4,000 was spent in 2014 on coagulation testing prior to MSK biopsies with further costs incurred secondary to additional nursing time utilization
- Eliminating or limiting pre-procedure coagulation testing would make care more efficient and timely

Aim/Goal
The goals of the study were to retrospectively identify all cases of bleeding complications related to MSK interventional procedures and define patient and procedural factors which increase the risk for bleeding. Once these factors are identified, guidelines could be developed to limit pre-procedural coagulation testing to at-risk populations only.

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The Interventions
- A database of 1,107 MSK biopsies performed between January 2006 and June 2014 was reviewed and the OMR searched for evidence of bleeding complications, i.e. hematoma, ecchymosis, or excessive bleeding. Additional factors suspected to increase bleeding risks were also recorded.
- New guidelines for coagulation testing were developed and approved by the Interventional Radiology Operations Committee 8/2014 with full implementation 10/2014: As part of the pre-procedural work-up patients were screened for a history of unexplained bleeding, blood disorders, liver disease, or anticoagulation medication and only patients with such risk factors underwent laboratory testing.

The Results/Progress to Date
- Over the first 9 years and 1,107 cases, there were 28 bleeding complications
- *In the subsequent year after implementation of the new guidelines from 10/2014 through 10/2015 there were 0 cases of bleeding related complications

Lessons Learned
- In general, bleeding complications from imaging guided MSK procedures are rare and all cases in our series were treated conservatively
- Coagulation values may not be sufficiently predictive of bleeding risk as none of the 28 patients with a bleeding complication had coagulation values which prohibited performing the biopsy based on BIDMC guidelines
- After implementation of more strict criteria for pre-procedure testing there was no increase in bleeding complications

Next Steps
- We will continue tracking future biopsies to assure that the rate of complications does not increase with the new policy
- We have also formalized post-procedure observation times for bone and soft-tissue biopsies to increase the detection rate of post-procedure complications prior to discharge
- There is an ongoing effort to identify specific factors which might be more predictive of bleeding, such as the location and imaging appearance of the lesion to be biopsied

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