Demographic and Clinical Predictors of Pulmonary Embolus After Total Joint Replacement
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Background: Pulmonary embolus is one of the more common complications following total joint replacement. In the peri-operative period, CT angiography remains the diagnostic modality of choice due to its high sensitivity for detection of PE. The decision to order the CTA however still is dependent on clinical suspicion. Recent radiologic studies have validated a way to quantitatively stratify pulmonary emboli clot burden on CTA, however, the clinical relevance of these findings remains unknown. The study set forth attempts to identify demographic and clinical predictors of clot burden as measured by CT angiography following total joint replacement.

Materials and Methods: From 2004 through 2008, 86 patients underwent total joint replacement and subsequently developed a pulmonary embolus during the peri-operative period at our institution. Seventy-six of these cases received a CT angiogram to diagnose the pulmonary embolus. These CT scans were reviewed and graded on the amount of clot burden by an attending radiologist using a quantitative grading system described by Qandali et al. (AJR:176, June 2001: 1415). The pulmonary emboli were classified based on clot location and status (occlusive or non-occlusive) and stratified into five groups of clot burden. A chart review was then performed to assess if presenting symptoms in these patients, such as vital sign changes, as well as demographics correlated with the level of clot burden. The clinical presentation and post-diagnosis clinical course was also reviewed and correlated with the level of clot burden.

Results: None of the patients with CT-diagnosed pulmonary embolus subsequently died. Clot burden as determined from CTA was found to be as follows: 26% minimal, 43% mild, 18% moderate, 12% severe, and 0% massive. There was no statistical difference between the subgroups with regard to presenting symptoms or demographics.

Conclusion: There are no clinical surrogates or demographic differences that statistically predict the size of clot burden. Therefore, a high clinical suspicion is warranted when evaluating a patient for a pulmonary embolus as seemingly innocuous symptoms may represent a large clot burden.