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INTERVIEW

Risk Stratification and Mortality with Large Bore Thrombectomy for Intermediate and High-Risk Pulmonary Embolism

An Interview With Dr. Travis McKenzie

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At the 2023 Society of Interventional Radiologists (SIR) Annual Meeting in Phoenix, Arizona, Interventional Radiologist Travis McKenzie, DO, from Summit Physician Specialists in Murray, Utah, presented results from a retrospective cohort study that assessed risk and mortality with large bore thrombectomy for intermediate and high-risk pulmonary embolism (PE).

The study evaluated the use of risk stratification and subsequent outcomes of pulmonary embolism. A total of 505 patients with a diagnosis of PE who were admitted to a large integrated health care system between January 2021 and October 2022 were identified, and analysis was performed comparing a hospital in the system where thrombectomy is commonly offered and one where standard therapy is offered. Baseline characteristics and outcomes were compared, and results showed that the overall 39-day mortality rate in the first hospital (with catheter-directed thrombectomy available) was lower than the second hospital, where standard therapy is the typical treatment for PE. The study concluded that risk stratification of patients with PE to guide care supports real-time decision-making and shows improved outcomes in decreased 30-day mortality.

Vascular Disease Management spoke with Dr. McKenzie to discuss the results of the study and what it means for large bore thrombectomy treatment for PE.

Dr. McKenzie, tell us about the retrospective cohort study on large bore thrombectomy you presented at SIR 2023.

Early in 2021 we standardized our selection criteria to treat patients with PE using large bore mechanical thrombectomy. Our goal was to select patients with higher mortality risks for thrombectomy. We then did a retrospective study to compare large bore thrombectomy with a cohort hospital that didn't offer that therapy. Our primary outcome was overall mortality risk for patients admitted with PE.

What made you want to study this treatment for PE?

With the newer catheters that are coming out for mechanical thrombectomy—they're quite a bit larger—we've noticed a dramatic change in results on the table with the amount of clot that we're getting out and the immediate physiologic changes. From my perspective, the newer catheters are essentially a new technique, a new procedure. Older data from smaller thrombectomy catheters or other thrombectomy techniques should not be extrapolated to these newer larger catheters. We need new data for these larger catheters.

I also wanted to look at how we evaluate patients who could benefit from thrombectomy. The classifications that we use are good, but they tend to bucket patients who have a large difference in mortality risk into the same category. We often use categorization from the European Society of Cardiology: high risk, intermediate high risk, intermediate low risk, or low risk. Looking retrospectively at our observational data, I found that the “intermediate high risk” group included patients with a mortality risk calculated from a PESI (Pulmonary Embolism Severity Index) score of 5% or 25% within that same category.

This study attempted to identify patients who are legitimately higher risk patients, regardless of clot burden, and treat those patients with thrombectomy to decrease the mortality risk. What we found was that the facility identifying and treating higher risk PE patients had an overall 30-day mortality risk (6%) that was approximately half of the rest of the facilities (10%-15%).

We then chose 2 facilities of similar size and demographics to analyze further. The only major difference in the subgroup analysis was treatment by thrombectomy. The 30-day mortality risk at the facility selecting higher risk patients for thrombectomy was 6.5%, compared to 12.3% at the hospital rarely performing thrombectomy.

Are there any follow-up studies planned?

Yes. We’ve garnered a lot of internal interest within our institution from the study. One of the main things that has come out of this study is an enthusiasm and engagement from our internal medicine and critical care colleagues. We are collaborating to be a site for the PE-TRACT trial, which is a prospective, randomized study [comparing catheter-directed therapy and anticoagulation with anticoagulation alone in 500 patients with submassive PE]. That study will help answer a lot of questions about new catheter-directed therapy for PE. ■

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