Commentary: An aortic branch goes to the lung: So what?

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Fistulous connections between systemic arteries and the pulmonary vasculature and/or parenchyma are rare but have been increasingly described in the literature in recent times.^{1,2} Most of these reports have been individual cases, and the clinical status of the patients have ranged from no symptoms to significant bleeding.^{3,4} These fistulas can be congenital or acquired, and potential complications include hemoptysis, hemothorax, and pulmonary hypertension.

In their case presentation, Saito and Kawai describe an asymptomatic patient who was found to have a connection between a branch of the aorta and a small pulmonary artery within the lung parenchyma.⁵ The authors decided to operate because the diameter of the fistulous artery increased by more than 60 percent in 1 year. They performed a thoracoscopic ligation of the fistulous systemic artery and a wedge resection of the involved lung. Three important questions are raised from this case.

First, which patients with fistulous connections between a systemic artery and pulmonary artery require operation? Although fistulas between branches of the aorta and the pulmonary artery have been described as “rare,” these fistulas are simply very enlarged bronchial arteries. As such, we should consider these connections on a spectrum and determine a size above which intervention is mandated. Because there is only sparse literature available concerning this topic, continued reports will have to be accumulated and analyzed to determine a high-risk diameter above which intervention is warranted. However, if a patient is asymptomatic and has a small fistulous artery seen on imaging, it is probably reasonable to observe that patient with surveillance imaging. Symptomatic patients should all undergo intervention.

Second, what is the optimal treatment? Saito and Kawai chose thoracoscopic ligation of the systemic vessel and a wedge resection of the involved lung because they observed dilated intraparenchymal arterial branches. But would percutaneous interruption of the systemic vessel have been enough, especially in an asymptomatic patient? It is quite possible that percutaneous embolization would have achieved the goal of preventing symptoms while avoiding thoracoscopy. If imaging shows that the fistulous vessel is

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Central Message

Fistulas between systemic arteries and pulmonary vessels are rare but have been described more frequently in recent times. Small, asymptomatic fistulas can likely be observed with minimal risk.

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accessible, it is probably reasonable to attempt percutaneous intervention as the first line of treatment.

Third, is concomitant lung resection required? The authors saw several dilated, pulsating arterial branches on the lung surface and resected the lung to remove these abnormal vessels. If a clear structural abnormality is seen, lung resection should be performed. However, an anatomic resection should usually not be necessary, because these fistulas will usually connect with more peripheral aspects of the lung; when percutaneous intervention is chosen, surveillance imaging can be used to monitor the parenchyma for any concerning changes.

Fistulas between systemic arteries and the pulmonary vasculature will be reported more frequently with time. An algorithm on the basis of the diameter of the fistulous systemic artery, symptomatology, and parenchymal changes should be developed to care for patients without overtreating their condition.

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