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LETTER TO THE EDITOR

The Key for Preventing Recanalization May be High Packing Density: Reply to Rajagopal et al.

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We appreciate the comments of Rajagopal et al. who suggest that venous sac embolization may prevent pulmonary-to-pulmonary reperfusion and systemic-to-pulmonary reperfusion after embolization of pulmonary arteriovenous malformations (PAVMs). We completely agree with the opinion, and for that reason, there was no pulmonary-to-pulmonary reperfusion or systemic-to-pulmonary reperfusion in our study.

Recanalization is the most frequent pattern of persistence after embolization for PAVMs. To prevent recanalization, it should be important to perform tight embolization, namely embolization with high packing density. When some coils were placed at the venous sac as scaffold, embolization of the feeding artery can be performed easily with high packing density. We think it might have contributed to the better results of the venous sac embolization reported in the literature [1]. However, it was reported that recanalization occurred even after venous sac embolization [2]. So, venous sac embolization may not be perfect to prevent recanalization.

There was thrombosis around the coils after embolization, and the thrombosis could possibly be resolved. As a common feature of the pulmonary artery, it is more compliant than the systemic artery and has high fibrinolytic activity. So, we suspect the thrombosis can be easily resolved in the pulmonary artery and thus the recanalization can easily occur after embolization of PAVMs. To prevent recanalization after embolization of PAVMs, we think much higher packing density should be necessary compared to embolization for the systemic artery.

Hydrogel-coated coils can expand to a nearly fivefold higher filling volume than platinum coils of the same size and can embolize vessels with the material itself in place of thrombosis. In cerebral aneurysms, it has been reported that hydrogel-coated coils can increase packing density and lower recurrence [3]. So, we think it should be also useful to obtain high packing density in PAVMs and may contribute to results of our study.

Compliance with Ethical Standards

Conflict of interest The authors declare that they have no conflict of interest.

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