To the Editor:
I read with great interest the article by Fujii and colleagues, in which they reported the morphological and hemodynamic effectiveness of stenting for pulmonary artery stenosis. They concluded that there was a significant relationship between morphologic effectiveness and hemodynamic effectiveness. However, over 20% of the morphologically effective stenting did not achieve hemodynamic improvement and almost half of the morphologically ineffective cases resulted in a hemodynamic benefit. It seems to be a large difference. Is it only a problem with the setting of the criterion on improvement?

I and my colleague previously reported predictors of hemodynamically successful left pulmonary artery stenting in patients after repair of tetralogy of Fallot. In our study, we strictly limited the cases in order to reduce the variation in data. As a result, the number of the cases was only 9. The data, though small, demonstrated that both morphologic and hemodynamic evaluations of the contralateral pulmonary artery were important to predict the effectiveness of the stenting for the branch pulmonary artery stenosis. Our data suggested that the existence of branch pulmonary artery stenosis caused compensatory growth of the contralateral pulmonary artery and vascular bed. The compensatory growth made it possible to shift the blood flow from the stenosed lung to the contralateral lung. It may lower the right ventricular pressure. When the compensation was completed, it meant the pulmonary blood flow in the affected side became appropriate for the size of the stenosis, and the pressure difference of the stenosis disappeared. In this theory, the improvement in the perfusion ratio by stent implantation for branch pulmonary artery stenosis can be predicted by the contralateral pulmonary artery diameter (the indexed diameter or the ratio to the stenosed side pulmonary artery diameter) and the pressure difference of the stenosis before stenting.

In cases of unilateral branch pulmonary artery stenosis, the hemodynamics in the contralateral pulmonary artery can influence the change in hemodynamics by stent implantation. I would like to know the relationship between the indexed contralateral pulmonary artery diameter or the ratio of the contralateral pulmonary artery diameter to the diameter of the stenosis and the change of perfusion ratio in the Fujii et al’s study. Moreover, I am interested in the relationship between the pressure difference before stenting and the change in the perfusion ratio in their study.

References

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