News Release

Title

Usefulness of a refined computed tomography imaging method to assess the prevalence of residual pulmonary thrombi in patients 1 year after acute pulmonary embolism: the Nagoya PE study

Key Points/ Summary

- Long-term prognosis after acute pulmonary embolism (PE) is an important clinical issue.
- This study evaluated the prevalence of residual thrombi and thrombotic burden 1 year after acute PE.
- Residual thrombi 1 year after acute PE were detected in 74% by refined CT protocol.
- Right ventricular overload at diagnosis was related to the thrombotic burden at 1 year.

Research Background

Post-PE syndrome is defined to include persistent dyspnea, exercise limitation, and impaired quality of life (QOL) after acute PE. Post-pulmonary embolism (PE) syndrome has recently been recognized as an important pathology in the chronic phase after acute PE. Chronic thromboembolic pulmonary hypertension (CTEPH) is a most severe phenotype of post-PE syndrome with poor prognosis. Recently, since the new treatment options for CTEPH has introduced, the prognosis of CTEPH patient is improving. Therefore, it is an important task to detect CTEPH or those with preliminary stage of CTEPH (chronic thromboembolic disease: CTED) earlier to improve the prognosis.

Research Results

Nagoya PE study was a multicenter, prospective, observational study conducted at 46 hospitals in the Tokai area (Japan). The observational period was 1 year. Laboratory tests and echocardiography were performed at study entry and at 1 month, 6 months, and 1 year after acute PE. Contrast-enhanced CT was performed at 1 month and 1 year; all patients visited Nagoya University Hospital at the 1-year point to undergo our modified contrast-enhanced CT protocol. In addition, the 36-item Short-Form Health Survey (SF-36) and 6-min walking test (6MWT) were performed at the 1-year visit.

Among all patients, 74% had residual pulmonary thrombi 1 year after acute PE, and 3.8% developed CTEPH. In multivariate analysis, residual thrombi at 1 month were the only factor that was significantly related to residual thrombi at 1 year. The tricuspid regurgitation pressure gradient

≥60 mmHg, left ventricular end-diastolic dimension at diagnosis were significantly related to mCTOI at 1 year.

Research Summary and Future Perspective

Using improved CT imaging protocol, this research team found a high prevalence of residual thrombi 1 year after acute PE. Furthermore, right ventricular overload was related to the thrombotic burden. Further study is needed to evaluate the efficacy of each DOAC for treating residual pulmonary thrombi, including those leading to CTEPH. In addition, further study is needed to evaluate to what extent the earlier detection of CTED and CTEPH contribute to the improvement of the prognosis.

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