

Long-term Results of Pulmonary Endarterectomy

Keiichi Ishida¹, Masahisa Masuda², Nobuhiro Tanabe³, Hideo Tanaka²,
Toru Ishizaka¹, Hiroki Kohno¹, Goro Matsumiya¹, Koichiro Tatsumi³,
Nobuyuki Nakajima¹.

- 1) Department of Cardiovascular Surgery, Graduate School of Medicine, Chiba University
- 2) Department of Cardiovascular Surgery, National Hospital Organization, Chiba Medical Center.
- 3) Department of Respiriology, Graduate School of Medicine, Chiba University.

Objectives Pulmonary endarterectomy (PEA) is treatment of choice for chronic thromboembolic pulmonary hypertension (CTEPH). Although several reports on excellent mid-term survival after PEA exist, long-term outcomes remain unclear. In the present study, we sought to review long-term outcomes and to determine risk factors for late adverse events after PEA.

Methods We retrospectively reviewed 93 patients who underwent PEA through lateral thoracotomy (16 patients) or median sternotomy (77 patients) at Chiba University Hospital or Chiba Medical Center Between 1986 and 2010. Follow-up data was available for 89 patients (95.6% complete). Median follow-up period was 5.7 years and maximum follow-up period was 23 years. Fifty-five patients (59%) were female. The majority of the patients (82%) were in NYHA class III or IV. Mean PAP was 47 ± 10 mmHg and PVR was 859 ± 317 dyn.s.cm⁻⁵. The disease was classified as CTEPH type 1 (n=67), type 2 (n=17), and type 3 (n=9).

Results

There were 13 hospital deaths. During follow-up period there were 13 all-cause deaths including 4 disease-specific deaths due to right heart failure and three sudden deaths. At the most recent follow-up, 60 patients (90%) were in NYHA class I or II. Freedom from disease-specific death at 5, 10, and 15 years were 85%, 79%, and 67%, respectively. Freedom from disease-specific death or NYHA class III at 5, 10, and 15 years were 81%, 74%, and 65%, respectively. In Cox proportional hazard model, postoperative

mPAP was identified as a risk factor for late adverse events (disease-specific death, and disease-specific death or NYHA class III) (HR, 1.17; 95%CI, 1.013-1.349, $p=0.03$, and HR, 1.15; 95%CI, 1.071-1.240; $p<0.001$, respectively). In receiver operating curve analysis, postoperative mPAP of 27 mmHg was the cut-off values for disease-specific death and the adverse events (AUC, 0.89; sensitivity, 1.00; specificity, 0.66, and AUC, 0.88; sensitivity, 0.93; specificity, 0.64, respectively).

Patients with mPAP <27 mmHg had good late outcomes. Ten-year freedom from disease-specific death and the adverse events were 100 and 98%, respectively. In contrast, patients with mPAP ≥ 27 mmHg experienced significant adverse events beyond 5 years after PEA. Ten-year freedom from disease-specific death and the adverse events were 86% and 66%, respectively.

Conclusions PEA provided sustained favorable effects on long-term survival. Postoperative mPAP was an independent predictor for late adverse events and postoperative mPAP of 27 mmHg was the cut-off value for predicting late adverse events.