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Clinical characteristics and treatment strategy for acute aortic dissection in Tokyo Acute Aortic Disease Super-Network System

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Introduction: Acute aortic dissection (AAD) is one of the most fatal cardiovascular diseases. The prevalence of AAD is reported to be low. The clinical data of AAD from representative cardiovascular centers are not enough to show the whole range of clinical feature of AAD. We have to know the exact prevalence and clinical pictures of AAD under the new system, the Tokyo AAD Super-Network System (TAAD-SNS), for strategy of emergency transport and treatment of AAD which would cover the entire metropolitan area of Tokyo. TAAD-SNS started in 2011, and after slight modification, the new system of AAD re-started in 2013. The aim of this study is to elucidate the whole range of clinical characteristics and recent trends of treatment of AAD.

Methods: Out of 73 hospitals included in Tokyo CCU Network system, 41 hospitals are chosen for TAAD-SNS. These hospitals provide around-the-clock surgery. In this system, the availability of surgical division is monitored in real time. All of the patients suspected of AAD are transferred directly or from primary care hospital to the hospitals of TAAD-SNS.

Results: After exclusion of 237 patients with cardiopulmonary arrest on arrival, 4877 consecutive patients (2923 male, mean age of 69±14 y/o) were admitted to the hospitals with diagnosis of AAD from 2013 to 2016. Prevalence of AAD in Tokyo was about 10 patients per 100,000 populations in every year. After exclusion of 37 patients undetermined into type A or B, 4840 patients (2694 with type A and 2146 with type B) were analyzed. Among the type A patients, 1752 (65%) were classified into type of patent false lumen (classic-type), 721 (27%) of closed false lumen (intramural hematoma: IMH-type), and 221 (8%) were undetermined. Among the type B, 880 (41%) were classified into classic-type, 1129 (53%) of IMH-type, and 137 (6%) were undetermined. Both among type A and B, mean ages were younger in classic-type than in IMH-type (type A: 66±14 vs. 73±12 y/o, p<0.05; type B: 64±15 vs. 72±12 y/o, p<0.05). Prevalence of male population and risk factor of hypertension was higher in type B than in type A both among classic-type and IMH-type. Systolic blood pressure at the emergency room was lower in type A than in type B among both classic-type and IMH-type (classic-type: 124±34 vs. 161±38 mmHg, IMH-type: 130±51 vs. 163±56 mmHg). In-hospital mortality of surgical treatment for type A classic-type and type A IMH-type, conservative strategy for type B classic-type and type B IMH-type was 9.6%, 4.2%, 3.1% and 1.7%, respectively. Stentgraft implantation for type B AAD started and shows a favorable in-hospital mortality compared to the operative treatment (Stentgraft vs. surgery in type B classic-type: 7.8% vs. 6.5%, in type B IMH-type: 10.7% vs. 11.8%, respectively).

Conclusion: Our study showed that prevalence of AAD was 2–3 times higher than previous reports. We should consider to choose the treatment strategy according to the type of AAD, A or B, classic-type or IMH-type.