

EDITORIAL

Some Comments from the East on the European Association for Cardio-Thoracic Surgery (EACTS) & the European Society for Vascular Surgery (ESVS) Consensus Document for Treatment of Aortic Arch Pathologies

I read with great interest the new expert consensus document by the European Association for Cardio-Thoracic Surgery (EACTS) and the European Society for Vascular Surgery (ESVS) collaboration regarding aortic arch lesions.¹ I admire the writing committee and the document reviewers for their tremendous efforts to launch this statement. This guideline sets the standards for treating patients with aortic arch lesions and should be distributed widely. I have several comments.

This is the first statement to systemise definitions and classifications of the lesions and to categorise methodology of the diagnosis and treatment, although Ishimaru's aortic zone classification is already well known for the specification of the extent of lesions. Total arch replacement was defined as reconstruction including three arch branches from zone 0 to II anastomosis. Other procedures are classified as "partial arch" replacement. Additionally, arch configuration was set regarding the position of the innominate artery relative to the level of the lesser curvature of the arch. This concept facilitates the strategy for endovascular stenting in the arch.

The committee classified the phase of acute aortic dissection into three categories: "acute" being within 14 days of onset, "subacute" within 15–90 days, and "chronic" thereafter; however, we note that patients in the "hyper-acute" phase, within three days of onset, behave quite differently from those experiencing later dissection, and have higher incidences of aortic rupture, cardiac tamponade, and branch malperfusion.² The committees also define "non-A non-B dissection" as a separate entity from Stanford or DeBakey's classifications, and I agree with this statement because these patients certainly require a different approach from the classic type B aortic dissection.

The "shaggy aorta" is another entity that has attracted clinical interest because the definition of this very severe atheromatous aorta is not yet established and particular cardiopulmonary bypass strategies are required to prevent systemic organ embolisation.³

For the diagnostic tools, the committee underscored the importance of pre-operative brain MRI examination. We routinely use pre-operative brain MRI to evaluate "white

matter change" because patients with such brain MRI findings have worse neurological outcomes.⁴

The Japanese guideline 2011² (now under revision) would not use the term "intramural haematoma" in aortic dissection because it is difficult to distinguish clinically between dissection without a tear and dissection with a tear showing no blood flow in the false lumen. Non-communicating aortic dissection is defined where a crescent shaped false lumen exists, and there is no tear or blood flow entering from a tear. If there is apparent blood flow in the long axis direction in the false lumen, the lesion should not be dealt with as a non-communicating aortic dissection. Dissection with ulcer and non-communicating dissection are defined as different pathological conditions. On the other hand, cases with a thrombosed false lumen resulting from retrograde dissection that arose from a tear in the descending thoracic aorta or abdominal aorta should be classified as a communicating dissection, although imaging findings closely resemble those of a non-communicating dissection. As for indications for the treatment of ulcer or erosion, I agree with the statements of ascending aorta diameter >50 mm, ulcer or erosion deeper than 10 mm and wider than >20 mm. I would add another indication, thrombosed false lumen thicker than 11 mm.

Near infrared spectroscopy was used to assay whole oxyhaemoglobin in the tissue, but this method is not reliable for brain ischaemia with retrograde cerebral perfusion for brain protection, because oxygenated blood occupies the venous systems of the brain.

There are some methods in which arterial cannulation in the setting of the acute type A aortic dissection is inserted into the ascending aorta under monitoring by transoesophageal echocardiography. This method has some advantages because it is quick, does not need another skin incision, has antegrade body perfusion, and has a lower incidence of malperfusion. The committee did not state the strategies for acute malperfusion syndrome complicated by acute aortic dissection.

After the frozen elephant trunk (FET) procedure entered the market, a significant trend occurred towards routine application of total arch replacement with FET with zone II anastomosis in patients with acute aortic dissection. This strategy provides a greater possibility of thrombosis of the false lumen in the thoracic aorta.⁵ The occurrence of complications after partial arch replacement and after total arch replacement with FET is not so different. I would use

the FET in acute aortic dissection in IIa, not IIb. Comparing the free elephant trunk and the FET in terms of insertion of the thoracic endovascular aortic repair (TEVAR) stent graft afterward, the free elephant trunk is flexible and less secure at holding the new stent graft.

Kommerell's diverticulum, with right sided arch and aberrant left subclavian artery arising from the diverticulum is usually treated by replacement of the arch, and descending aorta with in situ reconstruction of the aberrant left subclavian artery through the right thoracotomy.⁶

It is unfortunate that both the EuroSCORE and the Society of Thoracic Surgeons (STS) score do not take thoracic aortic procedures into consideration in the analysis of clinical outcomes. We started a Japanese database of cardiovascular surgical procedures in 2000, and have collected data on the thoracic aorta from the beginning. The "Japan score" allows analysis of individual risks for patients scheduled to undergo thoracic aortic procedures, such as arch replacement, thoraco-abdominal aortic replacement, or TEVAR with various adjuncts of organ protecting systems.⁷

It is a misconception that the Asian races have a higher incidence of aortic aneurysm. Similarly, it is not proven that arteriosclerosis is more prevalent in Japan.⁸ I agree that we have a higher incidence of distal arch aneurysm, more patients with smaller constitution, and more elderly patients. Interestingly, the numbers of computed tomography scanners per million inhabitants is 107 in Japan, 64 in Australia, 39 in Switzerland, 34 in Italy, 35 in Germany, 43 in the USA, 9 in the UK, and 17 in France.⁹

I appreciate very much the "10 commandments" of table 7: 10 points describing when to choose "open" or "endo" repair. This is simple but comprehensive, and very helpful for discussion with the patient. Regarding infectious lesions in the thoracic aorta, we do not yet have established guidelines¹⁰ as we do for the abdominal aorta. We need to collect data including diagnostic images, therapeutic strategies, and clinical outcomes of patients with infected aorta and contaminated grafts.

Again, I congratulate the committees for their great achievements.

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