itself. To avoid the high risks strictly connected in this case with the sternotomic approach, we decided to establish pre-operatively a brain protecting perfusion arising from the common femoral artery. In this way the endovascular stent delivery caused no neurological complications. Moreover, excluding the aortic ruptured portion with the expanded endodent, the risk of acute and total aortic disruption from the sternotomy result is significantly lowered.

Subsequently, after the uneventful sternal entry, a Y-graft in Dacron was created to connect the aorta to SAB.

This technique allows treatment of an urgent and really serious event to a relatively low operative risk, without the use of cardiopulmonary bypass. The entire technique appears relatively invasive however, ensuring a complete treatment of the aortic arch disease.

References


ICVTS on-line discussion A

Title: Commentary to the case study
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eComment: The authors presented a very interesting case of contemporary management of aortic arch aneurysm using hybrid technique (a combined surgical and endovascular approach) [1]. The strategy considerably reduces the risk of hemorrhage from the damaged portion of aortic arch and complications associated with cardiopulmonary bypass and hypothermic circulatory arrest. The reported original method allowed the authors to perform surgery avoiding complications, thereby significantly decreasing the length of intensive care and hospital stay with good immediate outcome.

However, there are some points we would like to be addressed.

• In order to initially define the dangers of sternotomy, if in turn made the authors seek the original decisions, it would be interesting and important to demonstrate the angiographic and CT findings. This would allow for the determination of the local anatomy of the aortic arch aneurysm and its branches as well as its interrelations with ascending and descending parts and the sternum.

• It is not clear whether or not the mycotic origin of the aneurysm was ruled out, since it is a common source of false aneurysms and ruptured aortic arch aneurysms. This is of central importance as it is known that in case of infected aneurysms it seems more reasonable to establish an extra-anatomic aortic and brachiocephalic bypass. Endovascular repair of the mycotic aneurysms is controversial [2] and may cause adverse septic complications requiring reoperations.

• The original approach reported by the authors appears attractive, considering its advantages such as avoiding the use of cardiopulmonary bypass and hypothermic circulatory arrest as well as lowering the risk of hemorrhage from the aortic arch aneurysm. On the other hand, there are some disadvantages connected with the use of temporary surgical extra-anatomic bypass (lack of control on brain perfusion parameters; risk of thrombotic complications on account of extended circuit and time-consuming procedures; the need for additional reconstructive carotid surgery and performing the main part of the operative intervention in the state of full heparinization).

In the last 2 years in the Vascular Department of the Bakoulev Scientific Center of Cardiovascular Surgery, Russian Academy of Medical Sciences, 3 operations were performed in cases of mycotic aneurysms of the aortic arch and descending thoracic aorta using an original method. One patient following endovascular repair of the descending thoracic aorta had developed sepsis, as a result of stent-graft infection. Another patient, who had had salmonella infection, presented with false aortic arch aneurysm with signs of progressive expansion located at the level of origins of the left common carotid artery and subclavian artery. The cause of the mycotic aneurysm in the third case was not identified. In all three patients as a first stage procedure an extra-anatomic ascending-to-descending aortic bypass via right thoracotomy was performed (without the use of cardio-pulmonary bypass) [3]. After that, an adjunct cardio-pulmonary bypass (partial femoro-femoral bypass) was established and via left thoracotomy the aneurysm was exposed and repaired. It was possible to maintain the part of aortic arch and the adjacent brachiocephalic branches in all our cases. Due to this, additional interventions on the aortic arch and its branches were not required. In summary, the problem of surgical repair of the aortic arch aneurysms and their ruptures is vital and the reported method by Roberto Coppola et al. is contemporary, interesting and original. Nevertheless, the existing disadvantages necessitate further trials to optimize the treatment options for this complex group of patients.

References