INVITED COMMENTARY

Acute Aortic Occlusion Remains a Challenge for the Vascular Surgeon: Is Experience the Key to Success?

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Acute aortic occlusion is a potentially devastating condition caused by thrombosis, which usually involves its bifurcation and can extend up to renal arteries and cause acute renal failure with the consequent risk of renal infarction and haemodialysis. Moreover, aortic thrombosis can lead to massive ischaemia of the lower limbs with a high risk of limb loss and, in the most serious cases, death.[1]

As is known, the aetiology of an aortic occlusion is variable: embolism from the proximal aorta or the heart, including the left atrium, progression of atherosclerotic lesions, and after previous open or endovascular aortic interventions, and graft thrombosis. It is important to underline that a saddle embolus can occur if the patient suffers heart disease and/or dysrhythmias, particularly if intermittent, and that the infrarenal aorta and iliac arteries are the most common sites of chronic obstructive arterial disease.

An important topic that should be discussed in detail in all papers collecting experience of national registries are the differences between the centres and surgeons who perform the surgical operations: the fate of the interventions depends not only on the pathology but also on the operator.

Based on aetiology, there is a wide range of symptoms potentially leading to acute or chronic complications. Clinical evaluation of the patient should include careful consideration of the acute onset of symptoms because the aorta has a rich network of collateral pathways, particularly in a patient affected by a known chronic atherosclerotic disease: symptom stability can be interrupted by acute thrombotic events because of a complication of aorto-iliac plaque and embolisation.

Grip et al. report a large series of acute aortic occlusions.[2] The authors analysed the causes according to aetiology, surgical treatment, and evolution focusing on the time trend.

Saddle embolus was significantly more common in the group of patients affected by heart disease (dysrhythmias are mostly considered in this group) and absence or a lower incidence of active smoking than in atherosclerotic aorta group. This topic shows that embolic occlusion is independent of the common atherosclerotic risk factors, but depends frequently only on the alterations of the coagulation cascade in older patients or dysrhythmias in younger ones, confirmed also by the unchanging incidence over time.[3]

Another important aspect is the increasing number of graft thromboses and the higher incidence of renal failure. As is well known, all intravascular foreign bodies are thrombogenic. It should be stressed that graft thrombosis can cause rapid thrombus enlargement and it is therefore mandatory to restore the blood flow as quickly as possible to avoid onset of a revascularisation syndrome which can quickly lead to multiorgan failure or acute renal shutdown. In this field we must stress the utmost importance of strict collaboration and cooperation between surgeon and anaesthetist to prevent numerous systemic complications.

The authors fail to distinguish between surgical and endovascular grafts, which could be very important. In our opinion the increasing incidence of graft thrombosis could be related to the more aggressive use of aorto-iliac endografts for aortic pathology without proper selection of patients and materials.

A further key point is the higher mortality in the saddle embolus group. The fragmentation of the embolus could probably be a trigger for trash foot. Moreover, it must be borne in mind that simultaneous restoration of the blood flow to both ischaemic legs may cause the spread of toxic metabolites generated in the tissues during the absolute ischaemia time.

Acute aortic occlusion with different symptom patterns is a life threatening pathology that requires skilled and experienced vascular surgeons for diagnosis, clinical evaluation, and treatment. Indeed, in cases of acute rapid revascularisation, it is mandatory that the team works with anaesthetists and the critical care unit for a good outcome.

REFERENCES

1 Norgren L, Hiatt WR, Dormandy JA, Nehler MR, Harris KA, Fowkes FG; TASC II Working Group. Inter-society consensus for the management of peripheral arterial disease (TASC II). *J Vasc Surg* 2007;**45**(Suppl. S):S5–67.
2 Grip O, Wanhainen A, Bjorck M. Time-trends and management of acute aortic occlusion: a 21-year experience. *Eur J Vasc Endovasc Surg* 2019;**58**:690–6.
3 Kaschwich M, Behrendt CA, Tsilimparis N, Kölbel T, Wipper SH, Debus ES. Management of acute aortic thrombosis. *J Cardiovasc Surg (Torino)* 2017;**58**:313–20.

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