Prevention, Diagnosis, And Treatment Of Retrograde Dissection After TEVAR

Germano Melissano
Yamume Tshomba
Davide Logaldo
Roberto Chiesa

Background:
Hybrid repair of aortic arch pathology consists of supra-aortic trunks rerouting and aortic endograft deployment. This technique has emerged as a less invasive alternative to open surgical repair, especially in patients with significant comorbidities. Procedure-related complications, however, are being observed. Aim of this study is to describe retrograde aortic dissection as a complication of endovascular treatment of aortic arch pathology.

Patients And Methods:
From 1999 to 2013, 178 patients underwent hybrid treatment of aortic arch pathology in our Center. Patients presented with atherosclerotic (n=146; 82.0%) or dissecting (n=32; 18.0%) aneurysms. According to Ishimaru’s classification scheme, aortic arch aneurysms were classified as zone 0 (n=54; 30.3%), zone 1 (n=38; 21.3%) and zone 2 (n=86; 48.3%). Commercially available endografts were used in all cases.

Overall, 6 patients (3.3%) developed retrograde aortic dissection extending to the ascending aorta. One patient was treated for dissecting zone 2 aneurysm and developed retrograde dissection intraoperatively. Two patients were treated for atherosclerotic aneurysm as zone 0 and developed the dissection within 30 days from the index procedure.

During follow up (mean 24.5±18 months) 3 cases were observed; among these patients, 2 had dissecting aneurysms and 1 had atherosclerotic aneurysm; 2 patients were treated as zone 0 and 1 as zone 2.

Results:
Two patients died at onset of dissection: the causes of death were stroke (n=1) and ascending aorta rupture (n=1). Four patients underwent emergent ascending aorta and arch open surgical replacement; median sternotomy, hypothermic circulatory arrest and antegrade cerebral perfusion were performed in all cases. All interventions were technically successful and no intraoperative death was observed. One patient developed permanent paraplegia after the operation. One patient developed transitory renal failure. All patients are alive at follow up and no further major complications occurred.

Conclusions:
Endovascular and hybrid techniques represent less invasive solutions than open surgery in the treatment of aortic arch pathology. Retrograde aortic dissection is being observed as a procedure-specific complication of endovascular techniques. Close follow up after aortic arch endovascular repair is mandatory.