Trans-brachial intra-aortic balloon pumping in patient with acute myocardial infraction complicated with cardiogenic shock

Background

The mortality rate among patients with cardiogenic shock complicating acute myocardial infarction is high even when the patients undergo early revascularization with percutaneous coronary intervention (PCI) or coronary artery bypass grafting (CABG). Intra-aortic balloon counter-pulsation is the most widely used form of mechanical hemodynamic support in this clinical setting. IABP counterpulsation was first reported in 1968 as a cardiac assist device in a patient with cardiogenic shock.

Case presentation

A 47 years old gentleman, he was diabetic and heavy smoker, he suffered from intermittent chest pain one week before, he was brought to our ER complaining of chest pain. His vital signs were (BP 69/41 – pulse 83/min – afebrile – respiratory rate 21/min). By examination, he had signs of hypoperfusion (pale with cold extremities and very week peripheral pulsation). His ECG showed ST depression in lateral leads. Bedside echo showed diffuse hypokinesia of LV walls with impaired systolic function EF 38% thus cardiogenic shock was favorable. Lab results showed impaired liver and renal function and elevated cardiac enzymes. he was sent immediately to cath lab.

Femoral area was prepared (femoral artery for coronary angiography and femoral vein for standby TPM) .Unfortunately , the wire couldn't be advanced due to occlusion of the common iliac artery as detected by peripheral angio and confirmed later by aortogram which revealed total occlusion of descending abdominal aorta up to bilateral common iliac artery . As radial pulse in both sides was unpalpable, coronary angiography done through right brachial artery which revealed diffuse coronary atherosclerosis. LM ostial segment had 70% stenosis followed by 50% distal stenosis. LAD was diffusely diseased vessel, proximal to mid segments had 80% stenosis. LCX proximal to mid segments had 90% diffuse stenosis. RCA ostial segment had 90% stenosis, proximal segment had 80% stenosis followed by diffusely diseased artery up to PDA. Immediately after finishing CA, patient developed cardiac arrest in the form of VF which reverted by 200 J DC shock then asystole. After 5 minutes CPR, patient regained sinus rhythm. the patient was intubated and mechanically ventilated. After discussion with heart team, PCI was recommended with IABP support. As there was no femoral access, IABP was inserted through right brachial artery. Successful PCI with complete revascularization was done through left brachial artery. Patient shifted to CCU for close monitoring and observation. Mild cyanosis was noted in the right hand, IABP and mechanical ventilator were removed after 48hrs. patient discharged home after one week with good condition

Conclusion

Percutaneous insertion of an IABP through the brachial artery is a feasible and relatively well-tolerated strategy to bailout emergency patients with cardiogenic shock and diffuse atherosclerosis of the descending abdominal aorta and peripheral arteries.