intra-arterial CT angiography to demonstrate preoperatively the Adamkiewicz’s artery (AA) in 27 patients with acute or chronic thoracic aortic disease. The authors showed the continuity of artery in 61% of cases, and in all cases they gathered enough information concerning its origin. Indeed, in comparison to MRI and intravenous CT-angiography efficiency to demonstrate the AA (70—85% and 90%, respectively) [2,3], the presented method seems to be superior. However, the study also showed some of the method’s drawbacks that should not routinely be performed in aortic dissection.

(A) Although there were not any cases of aorta rupture in the cohort of patients with aortic dissection (14 patients), the patient’s discomfort and pain may increase the vessel’s pressure and thus the potential risk of rupture as well.

(B) The introduction of a catheter tip into the false lumen, or the occlusion of some radical arteries could cause an incomplete demonstration of origin or of its course. Indeed, they failed to demonstrate the continuity down from innate origin in up to 39% of cases. In addition, in their Fig. 1D it was evident that, although the left intercostals are well demonstrated as they originate from true lumen, the right intercostals appear faintly. It means that in this case, if the AA is structured by some of the right radicals, it will appear faint, interrupted, or even absent (Fig. 2). In fact, they observed an absence of the artery’s origin in three cases due to technical reasons (all in patients with dissection), an absence of continuity of course of artery in 10 cases (39%), and patients with dissection in 50% of the cases (i.e. 36% of cases of dissection) (see Table 1). However, in about 35% of patients with dissection, two arteries have been found.

(C) Toxicity of contrast media or ischemia due to macroembolism is a substantial problem. Neuro-toxicity of contrast media (alone or in combination with ischemia) to the spinal cord, although rare, may cause severe spinal injury with poor prognosis [4].

(D) Failure to demonstrate the continuity of arteries in about 36% of cases (see B) means that surgeons cannot be sure of their potential intraoperative decision to exclude any radical arteries. Furthermore, the operative strategy of the surgeon remains largely unaffected by the findings of preoperative angiography, and the number of segmental arteries that are finally preserved are not significantly different between the groups undertaking or not undertaking angiography [5].

(E) Avoidance of surgery in five of the patients with aortic dissection did not give us the real risk of paraplegia. In fact, it may mean that judgment based on an angiography’s findings may lead to a wrong decision.

Finally, although this interventional method seems to be highly effective in non-emergency cases, in cases of aortic dissection it cannot demonstrate the complete course of AA in a significant number of cases.

References


Letter to the Editor

The coronary collaterals to the chronically occluded right coronary artery

Efstratios Apostolakis, Karolina Akinosoglou

Department of Cardiothoracic Surgery, University Hospital of Rion, Patra, Greece

Faculty of Life Sciences, Imperial College London, United Kingdom

Received 27 April 2007; accepted 2 July 2007; Available online 6 August 2007

Keywords: Collateral coronary circulation; Coronary artery disease; Model of collateral coronary circulation; Coronary collateral autoregulation

We went through the perfectly constructed reported article by Verhove et al., with great interest [1]. The authors studied the changes of left internal thoracic artery (LITA) and right internal thoracic artery (RITA) flow which were implanted onto left anterior descending (LAD) and circumflex artery (CX), respectively. This was in relation to clamping and declamping of vein graft, implanted onto completely chronically occluded right coronary artery (RCA). They assumed, that the observed reduced flow of RITA after declamping of vein graft, indicates that only the CX artery offers collaterals to chronically occluded RCA. This explanation, in our opinion, could be considered as arbitrary for the following reasons. Firstly, usually during preoperative study of coronary arteriography, we have noticed the periphery of chronically occluded RCA depicted by collaterals from the LAD. Secondly, according to the literature to date, the visible collateral channels arise either from the contralateral coronary artery or from the ipsilateral one [2,3]. Thirdly, in our opinion, we can consider the coronary circulation as a model of three different ‘zones of demands’ of LAD, of CX and that of RCA. These three ‘zones’ communicate with each other after collateral development depending on their demands of blood, and an ‘interior
autoregulation’. Consequently, in their model of patients with three-vessel disease, the ‘LAD zone’ with the highest demands develops collaterals with both ‘CX zone’ of quite less demands, as well as with ‘RCA zone’ of even less demands. In a similar way and in the same model, RCA ‘demands zone’ develops collaterals with the two other ‘zones’, that of LAD and CX. After implantation of LITA and RITA onto the ‘zones’ of LAD and CX, respectively, and before declamping of vein graft, it could be argued that these three ‘zones’ share the sum amount of blood offered by both ITAs blood, according to their demands, and giving priority in our opinion, to the higher demands of the ‘LAD zone’. This hypothesis may be supported by the impressive observation that, in contrary to our expectations, the flow of LITA is low and similar with that of RITA, in 75% of the cases (see Table 2). After declamping of the vein graft, the relative small requirements of ‘zone of RCA’ are reached, whereas both communicating ‘zones’, mainly that of CX and less that of LAD, become free of RCA blood diversion, in different percentage each. Indeed, flow in both arterial grafts is reduced after this manoeuvre: mainly that of RITA (significant reduction), and less that of LITA, in about 50% of cases, but to a non-significant degree, as it is depicted in Table 2. They could have examined this hypothesis, if they had temporarily occluded both LITA and RITA and had measured the respective flow of vein graft for every case. Finally, a possible limitation of the study, concerning the interpretation of changes of flow in LITA and RITA, could be the possible (not referred) use of vasodilators (e.g. nitrates) during measurements, which abolishes the autoregulation of collateral circulation [4].

References


The authors of the original paper [1] were invited to reply to this Letter to the Editor but they did not respond.

* Corresponding author. Address: 2A Butler Road, West Harrow, Middlesex, London HA1 4DR, United Kingdom. Tel.: +44 7864958573; Mob.: 30697762897. E-mail addresses: stratisapostolakis@yahoo.gr (E. Apostolakis), k.akinoglu07@imperial.ac.uk, karolakinosoglou@yahoo.gr (K. Akinoglu).