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Clinical Management and Prognostic Implications of Megadolichocoronary Arteries: A Case Report and Literature Review

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Abstract

Megadolichocoronary arteries are defined by the increase in length and caliber of one or more coronary arteries. They are relatively rare and are most often discovered during routine coronary angiography in patients admitted for management of acute coronary syndrome or stable angina. The main etiology is atheroma in adults.
These abnormalities expose to an increased risk of intra coronary thrombosis due to blood stasis, the association with stenosing lesions seems to be the preponderant prognostic factor.
We report the case of a 47-year-old patient, with recent diabetes discovered 10 days before his admission and overweight as cardiovascular risk factors, hospitalized in emergency for the management of an acute ST-positive coronary syndrome with aspect of megadolichocoronary at coronary angiography, put under medical treatment alone with anticoagulant and a double anti-platelet aggregation with favorable evolution.
In the light of this case and a review of the literature, we discuss the particularities of this type of lesion and the possible therapeutic options..

Keywords

Megadolichocoronary, Coronary ectasia, thrombosis, coronary angioplasty

Main Article

Introduction

Extraordinary dilatation and elongation of arteries have been described by anatomists since the 19th century. Leriche called this anomaly "mega-dolicho-artery" (1). The first case of coronary megadolicho was reported by Charles Bougon in 1812 (2), This pathology remains rare, often associated with stenosis and presents only a particular form of coronary atheroma. We report the case of an acute coronary syndrome with ST-segment elevation in inferior occurring on megadolicho-coronary as well as a review of the literature in order to discuss the particularities of this pathology and the possible therapeutic possibilities.

Patient and observation :

Mr EL.Y, 47 years old, was admitted for the management of an acute ST positive coronary syndrome of inferior topography with as cardiovascular risk factors: a recently discovered diabetes (10 days before his event) and overweight; and as medical history a hepatic steatosis under hygienic and dietary measures only. The symptomatology reported is the sudden onset, six hours before his admission, of intense, prolonged, retro-sternal thoracic pain, radiating to the left upper limb without any other associated sign. A resting electrocardiogram showed a regular sinus rhythm with an aspect of ST-segment elevation in the inferior leads (FIGURE 1).Transthoracic echocardiography shows segmental kinetic disturbances such as inferior and inferoseptal hypokinesis with preservation of left ventricular systolic function and a LVEF of 50% by Simpson biplane method(FIGURE 2), absence of significant mitro-aortic valve disease or dilatation of the ascending aorta. Coronary angiography revealed a megadolicho coronary with staged subocclusive stenosis of the middle anterior interventricular, 50-60% stenosis of the marginal (FIGURE 3) 60% stenosis of the proximal circumflex and occlusion of the distal part of the right coronary - segment III (FIGURE 4) responsible for the acute event.

The patient was initially put on dual antiplatelet and anticoagulant therapy with monitoring and coronary angiography after one week.

The follow-up coronary angiography showed a slight improvement in distal flow, compared with the first one, and a recovery of the contralateral collateral circulation.

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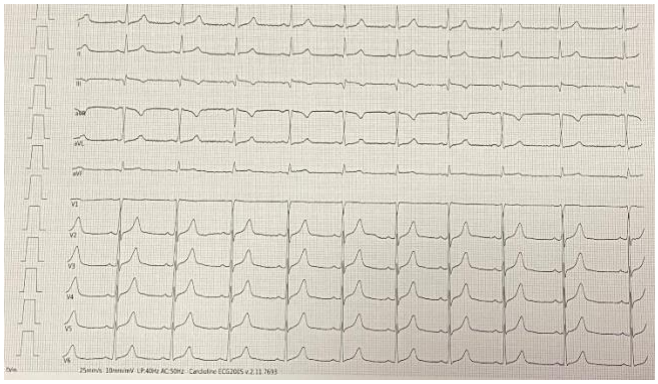

FIGURE 1: echocardiogram at admission .

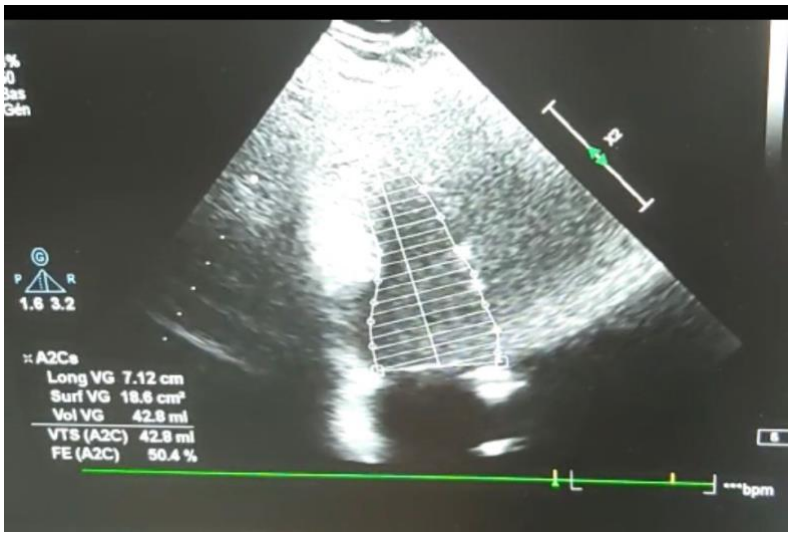

FIGURE 2 : Transthoracic echocardiography at admission

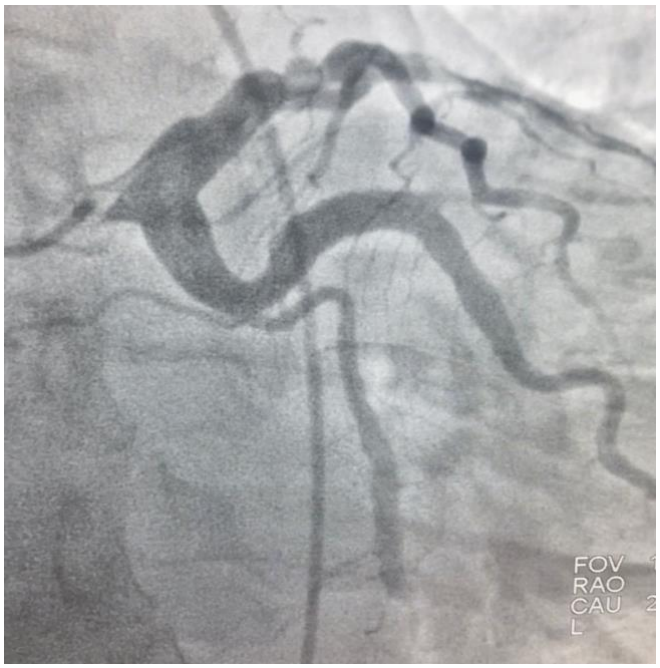

FIGURE 2: Stenosis of 50 to 60% of a marginal on megacoronary (incidence OAD 10 Caudal 20)

FIGURE 3: Irregular right megacoronary occluded at the proximal part of segment III of the right coronary (OAG 45 incidence).

Discussion

By definition, coronary ectasia is defined as dilatation of more than 50% of the length of the artery, and focal ectasia is defined as dilatation of less than 50% of the length of the artery. (3). The prevalence of this pathology varies between 0.2 and 6%, with an average of 1.6% in series including ectasia and atheroma (4). A higher figure of approximately 5-12% was noted in a series including an Asian population justifying a probable pathogenic incrimination of ethnic/genetic factors (7), with a lower incidence in Europe than in Asia.

Coronary ectasia is more common in men than in women, respectively 2.2% to 0. 5% (5) and can be seen at any age and of various physiopathological mechanisms: autoimmune pathologies such as KAWAZAKI, TAKAYASU are mostly found in children (25%) (6), while atheromatous etiology is the most frequent in adults (about 77%) (8), rarer cases of other vasculitis, congenital diseases and post-position of active stents have been described in the literature (less than 2%) (9). A common factor in all these conditions is the embrittlement of the media with a decrease in elastic elements which allows the dilation of the vessel wall at the level of the defective structure, this mechanism is probably different from that of post-stenotic dilation, as it can be observed in vessels without any stenosis and in any segment of their entire length (10)

The mode of revelation of these coronary anomalies is most often during a coronary angiography routinely indicated in patients admitted for management of an acute coronary syndrome or stable angina (4).

Coronary findings were classified according to the extent of ectatic involvement of the right anterior interventricular coronary artery, left anterior coronary artery, or left circumflex coronary artery. Diffuse ectasia in two or three vessels was classified as type I, diffuse ectasia in one vessel and localized in another vessel as type II, diffuse ectasia in a single vessel as type III, and localized or segmental ectasia as type IV (11). In a series by Demopoulos and Harikrishnan (10), a predominance of types II and III was noted with similar figures for the other types, the involvement of the right coronary artery was in the majority followed by the left circumflex and then the left anterior interventricular artery whereas in a series by PETER. N and S. Ajit (12), the left anterior interventricular artery was predominantly involved, followed by the right coronary and the left circumflex, the common trunk being involved in only 3% of cases in the context of a diffuse involvement of the whole coronary tree. Moreover, the two studies confirm that diffuse involvement frequently involves the right coronary and the left anterior ventricle in mainly discrete forms of coronary ectasia (11)(12). (11)(12). In the follow-up of a series of patients with all types of ectasia, there were no significant differences in the incidence of events between patients with ectasia of a single or multiple arteries and those with monotruncal or multitruncal involvement with coronary ectasia. There was no significant difference in the percentage of patients in whom the vessel responsible for the cardiac event was the same as the ectatic vessel in relation to the first and subsequent cardiac events (12).

In the absence of obstructive atheroma, treatment is not well established and continues to be a therapeutic dilemma. When present, the choice is between medical treatment alone and revascularization by angioplasty or surgical treatment as in usual coronary disease. Oral anticoagulant therapy based on pathophysiological assumptions and clinical cases has been proposed by some authors but should be discussed on a case-by-case basis. Revascularization, when performed, is mostly surgical (35-50% of cases) with comparable results between ectatic and non-ectatic atheroma, which may combine repair or exclusion of the ectatic segment and bypass surgery. Furthermore, angioplasty seems to be underused despite a reported satisfactory feasibility with, in ACS, more distal embolizations and delayed flows, this can be explained by the angiographic aspect which presumes a good downstream bed of small caliber but probably underestimated given the caliber of the ectatic segment. The improvement of device profiles, namely self-expanding stents and their better diffusion, should improve the figures, but does not seem to arrive soon given the rarity of the pathology. (13)

Conclusion

Megadolichocoronary disease is rarely described in the literature and is often associated with coronary atheroma, of which it represents only a particular form. The association of an anticoagulant treatment seems to be reserved for the ectatic form with stenosis, in other cases such as vasculitis whose physiopathological mechanism is different, the indication remains to be discussed. Angioplasty remains under-used outside of ACS cases. The development of self-expanding stents would be a re-emerging option for this type of procedure. Surgery seems to give comparable results between atheroma on ectatic and non-ectatic arteries and should be considered on a case-by-case basis in terms of benefit/risk.

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