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RESEARCH ARTICLE

ST-ELEVATION MYOCARDIAL INFARCTION REVEALING A CORONARY ARTERY ECTASY : TWO (02) CASES REPORT

Z. Lahlafi[1], S. Nikièma[1], M. Désiré[2], Z. Lakhal[1] and A. Benyass[2]

1. Cardiology Intensive Care Unit, Mohammed V Military Hospital, Rabat, Morocco.
2. Non-Invasive Explorations Department, Mohammed V Military Hospital, Rabat, Morocco.

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Abstract

Coronary artery ectasy is a rare coronary disease often revealed by an acute myocardial infarction.The management of this pathology is not well established.We are reporting two cases of ST-elevation myocardial infarction associated with coronary artery ectasy.These cases were reported using electrocardiography and coronary angiography data and the modalities of treatment.Then a discussion was made on the basis of the literature concerning the topic of coronary artey ectasy and myocardial infarction.Our work adds to the literature by providing additional data on the link between artery coronary ectasy and acute myocardial infarction as well as the management modalities.

Introduction:-

Coronary artery ectasia (CAE) is a rare entity found in 2.7–2.8% of angiograms. (1,2) It is associated with atherosclerosis in 50% of cases. (3,4)CAE may be revealed by an acute myocardial infarction. In this case, management is challenging given that percutaneous coronary intervention (PCI) happens to fail most of the timewith higher rates of subsequent stent thrombosis, repeat revascularization, and long-term mortality (5, 6,7)We are reporting two (02) cases of ST-elevation myocardial infarction in CAE.Through these cases, we aim to show that CAE can lead to acute myocardial infarction and how challenging its management is.

Cases Presentation

Clinical case 1

Sixty-four-years-old retired military man with no previous history of cardiovascular disease, with modifiable cardiovascular risk factors of high blood pressure, presented to the emergency department complaining for chest pain infarct-like (retrosternal, intense and prolonged, radiating to the upper limbs) started five hours ago associated at rest.

Clinical examination was normal, blood pressure 120/60 mmhg, heart rate 73 beats per minute, apyretic.

The percritical electrocardiogram (ECG) revealed an ST-segment elevation with a convex appearance in the infero-latero-posterior leads associated with Q waves of necrosis. (figure 1a, b)

The patient has been thrombolyzed with success.

Corresponding Author:- Z. Lahlafi
Address:- Cardiology Intensive Care Unit, Mohammed V Military Hospital, Rabat, Morocco.

Later, he was admitted at the interventional catheterization room and the coronary angiography performed via the right radial approach showed no atheromatous lesion but an ectasy of the left anterior descending (LAD) coronary artery and the right coronary artery (RCA); the left circumflex (LCx) coronary artery was normal. (figure 2a, b, c)

The results of the transthoracic echocardiography showed severe hypokinesis of the inferior and inferolateral wall with a preserved ejection fraction. There were no post-operative complications, and the patient had stable haemodynamics and rhythm until discharge. The patient was treated in accordance with the latest European guidelines for the treatment of acute coronary syndrome.

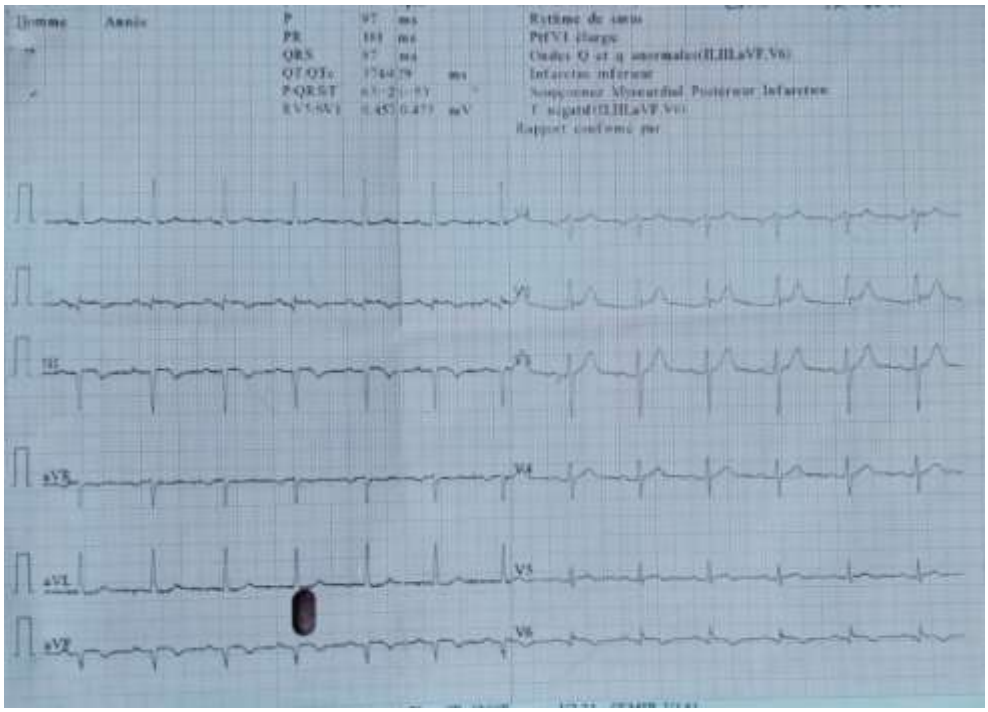

Figure 1a:- ECG showing an ST-elevation in the infero-latero leads assocaited with Q waves of necrosis.

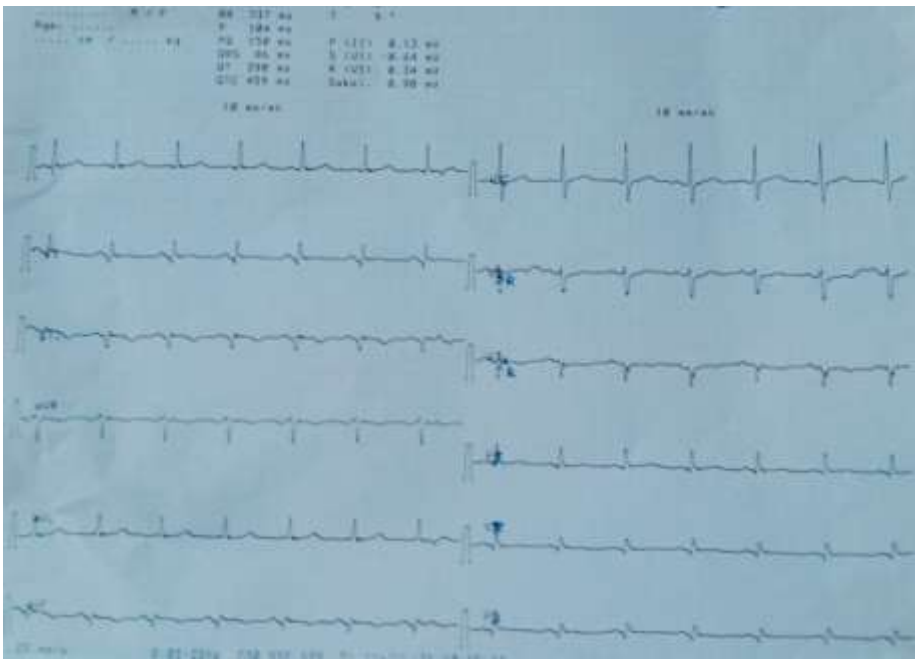

Figure 1b :- Posterior leads

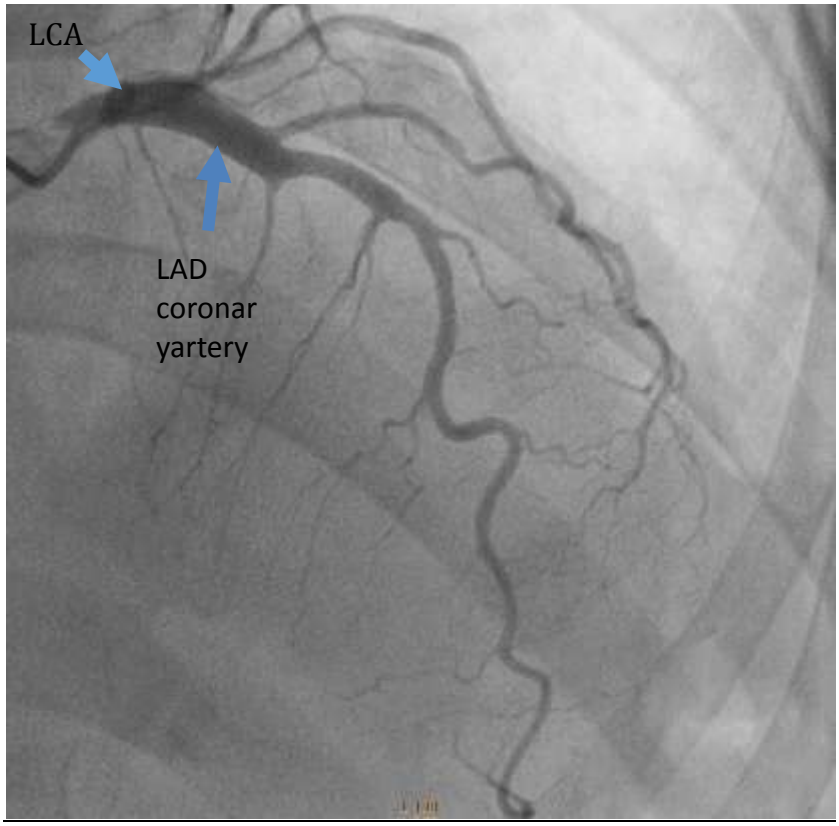

Figure 2a:- Dystrophy of the left coronary artery and the LAD artery coronary.

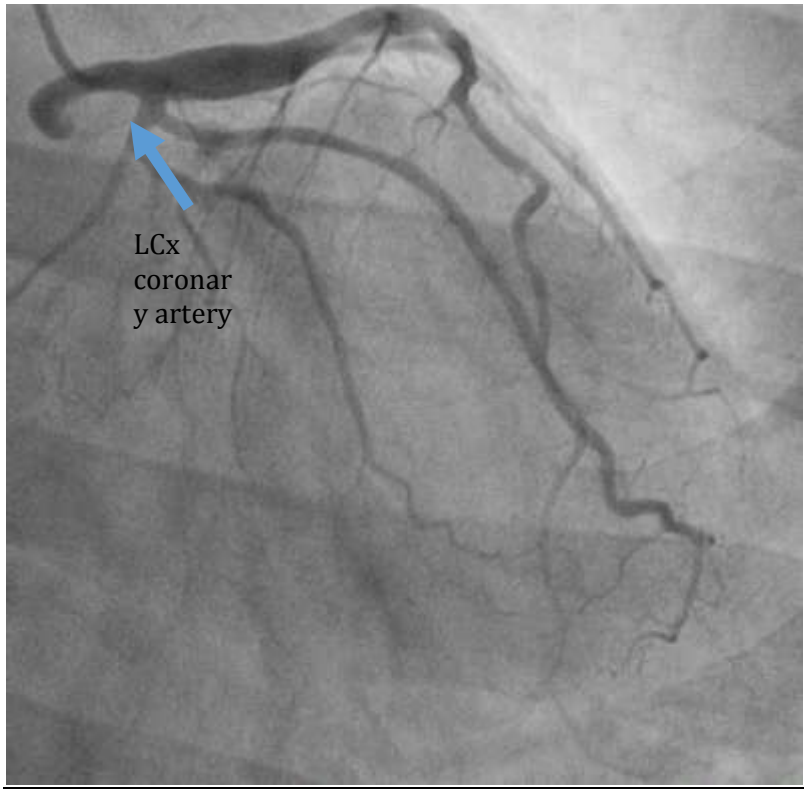

Figure 2b :- The LCx artery coronary has a normal size

Figure 2c:- Dystrophy of the right coronary artery showing no obstruction nor stenosis.

Clinical case 2

Fourty-nine-years-old active policeman with no previous history of cardiovascular disease, with modifiable cardiovascular risk factors of type II diabetes, chronic smoking stopped 6 months ago, presented to the emergency department with an acute retrosternal pain, intense and prolonged, radiating to the upper limbs and the lower jaw, started two hours and 30 mins ago at rest, associated with profuse sweating and vomiting.

Clinical examination found: blood pressure 143/78 mmhg, heart rate 81 beats per minute, apyretic.

The percritical electrocardiogram revealed a 2-mm ST-segment elevation with a convex appearance in the infero-posterior leads extended to the right ventricle with a mirror image in the anteroseptal leads. (figure 3 a, b)

Without wiating for the troponin assay, the patient was immediately admitted at the interventional catheterization room and the coronary angiography performed via the right radial approach showed an acute occlusion of the right coronary artery with thrombotic appearance; an ectasy of the right coronary artery, the left coronary artery, and the LAD coronary artery. (figure 4a, b, c)

The lesion was predilated with 4 inflations at a maximum pressure of 20 ATM for a total duration of 160 seconds. Angiographic control after dilatation showed an intermediate stenosis of 50% with restoration of a TIMI 2 flow. (figure 4d)

The patient then benefited from 72 hours of an anti-GPIIb3a.

The control coronary angiography showed a non-significant lesion of the right coronary artery with a thrombotic aspect on a localized coronary dystrophy (10mm).(figure 5)

A triple antithrombotic therapy was conducted until discharge with no complications.

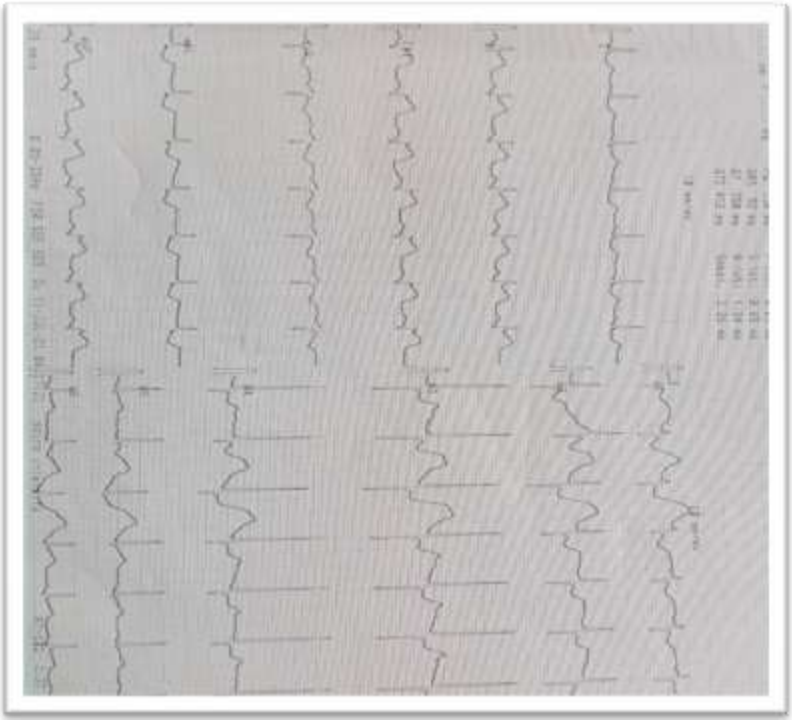

Figure 3a :- ECG showing an ST-elevation in the inferior leads with a mirror image in the anterior leads.

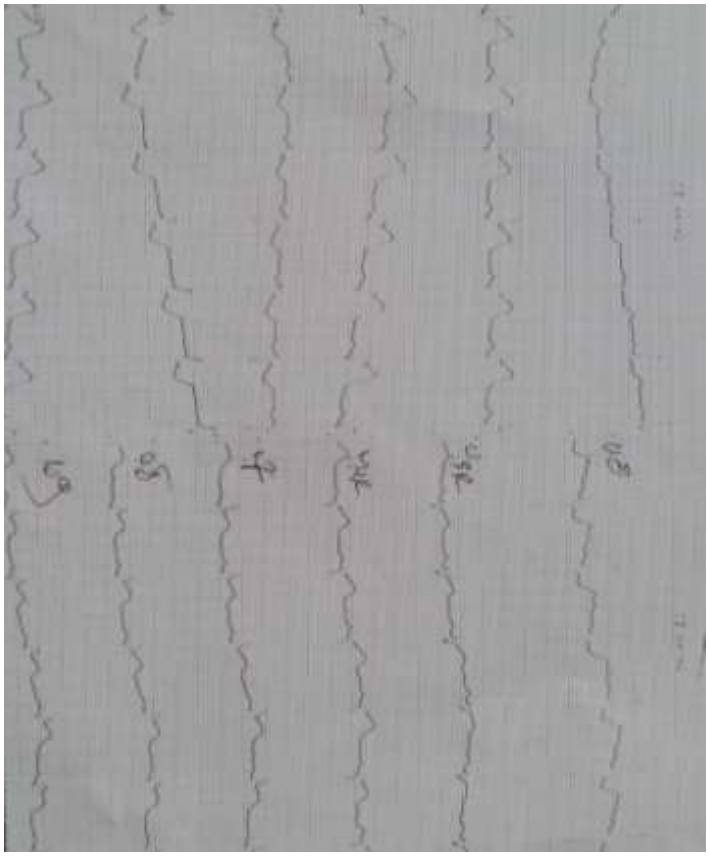

Figure 3b :-ST-elevation in the posterior and the right ventricle leads.

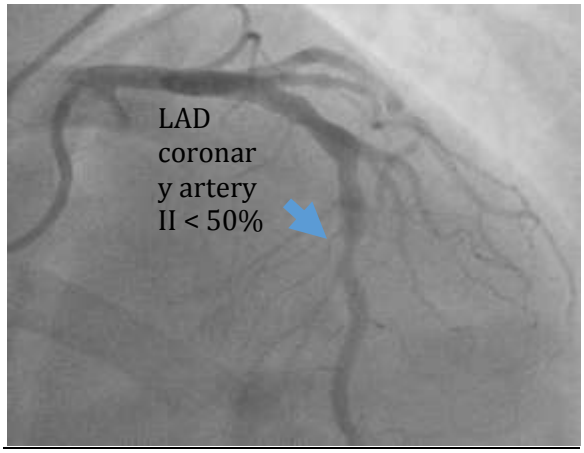

Figure 4a :-Dystrophy of the the left coronary artery and the LAD coronary artery with a non significant stenosis on its mean segment

Figure 4b : Dystrophy of the proximal segment of the LCx coronary artery with a non significant stenosis

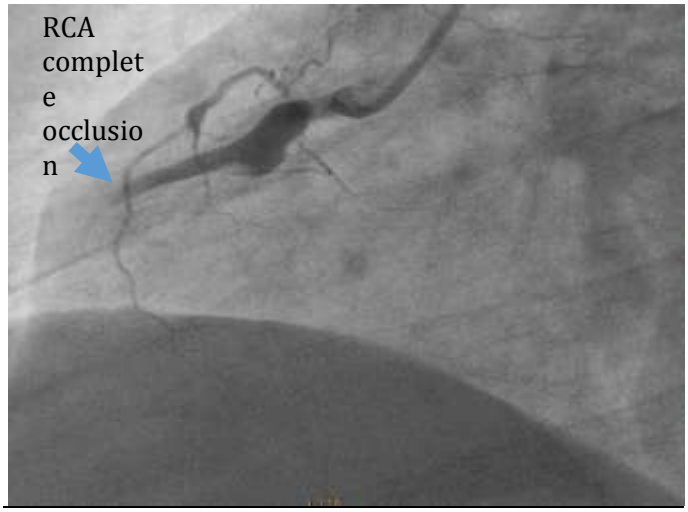

Figure 4c :-Dystrophy of the right coronary artery seat of a complete occlusion

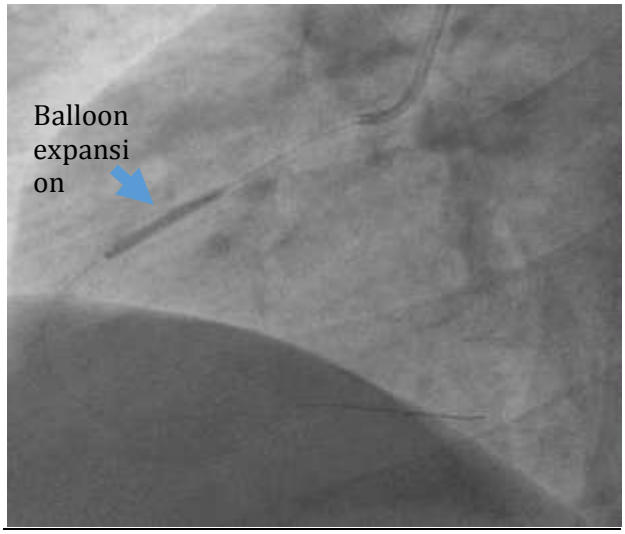

Figure 4d: - Expansion balloon

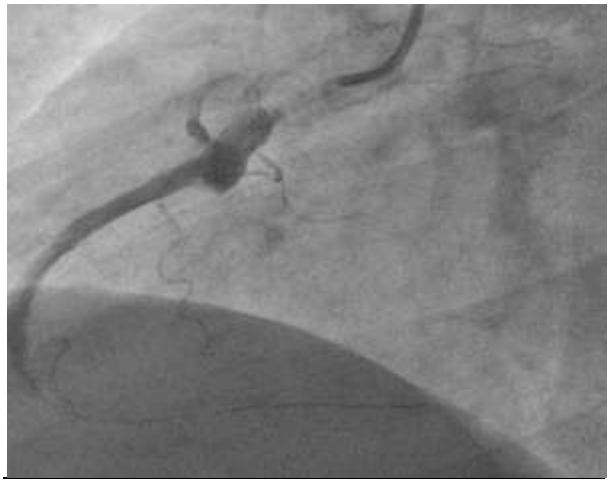

Figure 4d: - Image showing a TIMI 2 flow after balloon expansion without stent implantation

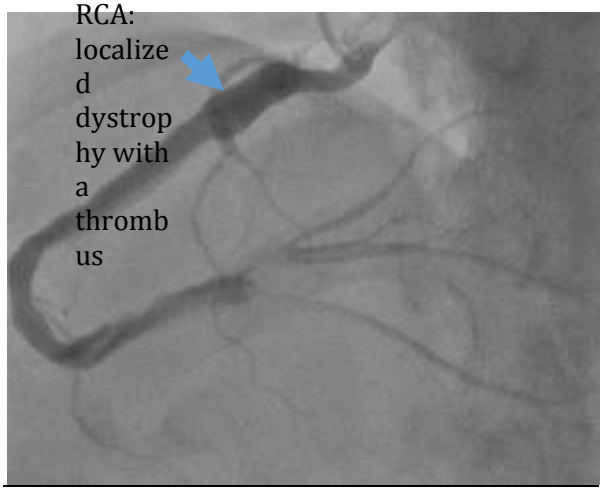

Figure 5 :- control coronary angiography showed a non-significant lesion of the right coronary artery with a thrombotic aspect on a localized coronary dystrophy.

Discussion:-

The term coronary artery aneurysm is usually used to describe focal dilation of a coronary segment (≥1.5 times the adjacent normal segment), and the term coronary artery ectasia (CAE) is used to describe a diffuse dilatation of coronary arteries that involves ≥50% of the length of the artery (8,9,10)

The classification of coronary artery dilatation, as described by Díaz-Zamudio et al. makes it of clear understanding (see table 1). (11, 12)

Based on the shape or gross structure	
Saccular	Transverse diameter is greater than the longitudinal dimension
Fusiform	Longitudinal dimension is greater than the transverse diameter
Based on the vessel wall composition	
True aneurysm	Vessel wall composed of three layers: adventitia, media, and intima
Pseudo aneurysm	Vessel wall composed of one or two layers
Based on the size	
Giant aneurysm (adults)	>20-150 mm in diameter
Giant aneurysm (children)	>8 mm in diameter
Based on the extent of involvement	
Type I	Diffuse dilatation of two or three vessels
Type II	Diffuse dilatation in one vessel and localized disease in another
Type III	Diffuse dilatation of one vessel only
Type IV	Localized or segmental dilatation

Table 1:- Classification of coronary artery dilatation (11,12).

The physiopathology of coronary ectasia is not well known. Most of coronary artery aneurysms and coronary artery ectasias are caused by atherosclerosis or vessel wall injury after a coronary intervention. (5,9,13)

They may be associated with other conditions such as Kawasaki disease, infectious diseases, arteritis, Connective tissue diseases and Marfan's syndrome (14).

Our first patient had no atheromatous lesion while the second had atheromatous coronaries.
Coronary artery ectasy may be asymptomatic, or present as stable angina which appears to be the most common presentation. (14)

Acute myocardial infarction (AMI) can result from altered blood flow by distal embolization or occlusion of ectatic segment with thrombus. (14, 15)

Though ST-elevation acute myocardial infarction (STEMI) associated with CAE is rare, some cases are found in the literature (16,17,18)

Our two (02) patients presented with STEMI respectively in the infero-latero-posterior leads and the infero-posterior leads extended to the right leads.

CAE presents a therapeutic challenge because there are no randomized trials on its management.

The treatment of CAE may consist of medical management, surgical resection, and stent placement depending on the precise clinical situation and the size of the aneurysm. (19)

In all cases, cardiac risk factors must be corrected.

Percutaneous coronary intervention (PCI) at the acute phase of myocardial infarction may include manual aspiration thrombectomy (MAT), intracoronary glycoprotein IIb/IIIa inhibitors, intracoronary thrombolysis, stent implantation if the ectatic segment is short enough. (5,17)

PCI is yet challenging. Coronary artery ectasia lesions have high thrombus burdens that may be refractory to MAT or intracoronary delivery of medications. There is also a higher risk of embolic stroke with MAT. Stent implantation may also be diffcult given the ectatic anatomy. (5, 17)

In the cases presented above, the first patient had a successful thrombolysis with a coronary angiography showing no obstruction while the second patient had to go through PCI with predilatation and 72 hours of antiglycoprotein IIb/IIIa to resolve the coronary thrombus.

The prognosis depends on the size of the aneurysm. Giant CAE have a high risk of morbidity and mortality. (11)

Furthermore, CAE is pointed tas a predictor of future cardiac events in patients with Acute Myocardial Infarction.

In a study conducted by Takahito D. et al., CAE was associated with 2.71-, and 4.92-fold greater likelihoods of experiencing cardiac death and myocardial infarction respectively after a follow-up of 49 months compared to those without ACE.

The same study observed that patients with CAE receiving anticoagulation therapy who achieved an optimal percent time in target therapeutic range, defined as ≥60%, did not experience the occurrence of major cardiac events such cardiac death and myocardial infarction (P=0.03 versus patients with percent time in target therapeutic range (P=0.03 versus patients with percent time in target therapeutic range or without anticoagulation theurapy). (20)

Conclusion:-

Coronary artery ectasy is not only an etiology of acute myocardial infarction but also a prognosis factor when associated to aute myocardial infarction and a therapeutic challenge.While our first patient was successfully thrombolysed, the second has to go through PCI with predilatation and antithrombotic treatment.Randomized studies are necessary to standardize the management of coronary artery ectasy in general and acute myocardial infarction associated with coronary artery ectasy in particular.

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