INTERNAL MEDICINE - PEDIATRICS

UNEXPECTED CORONARY THROMBOSIS INDUCED BY ANTIPHOSPHOLIPID SYNDROME (HUGHES SYNDROME):
CASE REPORT

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UNEXPECTED CORONARY THROMBOSIS INDUCED BY ANTIPHOSPHOLIPID SYNDROME (HUGHES SYNDROME) - CASE REPORT (Abstract): Antiphospholipid syndrome (APS), one of the most common states of acquired hypercoagulability, is diagnosed by the persistent presence of antiphospholipid antibodies and recurrent episodes of vascular thrombosis. We present the case of a 39-year-old man late-presenting for cardiac rehabilitation treatment after primary percutaneous coronary intervention (PCI) performed for anteroseptal myocardial infarction. He was a nonsmoker, with no prior personal history of other cardiovascular diseases (CVD) or cardiometabolic syndrome. The 60% thrombotic occlusion of the left anterior descending artery (LAD) leading to the acute cardiac event was the only abnormality that was found. The only etiological explanation was the late measurement and the positive tests for antiphospholipid antibodies. In young patients with no history of thrombotic disorder, such as cancer, cardiovascular or metabolic diseases, the unexpected onset of myocardial infarction by thrombotic coronary occlusion can be attributed to silent, undiagnosed autoimmune condition.

Keywords: ANTIPHOSPHOLIPID SYNDROME, MYOCARDIAL INFARCTION, ANTIPHOSPHOLIPID ANTIBODIES, AUTOIMMUNE DISEASES.

Antiphospholipid syndrome (APS), also known as Hughes syndrome (1), is an autoimmune disorder and represents an acquired hypercoagulable state. It is characterized by vascular thromboses or pregnancy morbidity, such as fetal loss, and it occurs in patients who have persistent antiphospholipid (aPL) antibodies (2). As aPLs have been a hallmark feature of APS for almost half a century, aPLs detection is the first-line approach for diagnosing the APS. Per 2006 revised APS classification criteria (3), the diagnosis of APS requires the persistent presence of at least one of the following aPLs, including lupus anticoagulant (LA), immunoglobulin G (IgG) and/or immunoglobulin M (IgM) anti-cardiolipin (aCL) antibodies, and IgG and/or IgM anti-β2 glycoprotein 1 (aβ2GP1) antibodies. Immunoglobulin A (IgA) aCL and IgA aβ2GP1 antibodies are not currently included in the laboratory criteria for APS, but are suggested as “noncriteria” antibodies for seronegative patients with clinical suspicion of APS (4, 5).

CASE REPORT
A 39-year-old male presented for cardi-
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ac rehabilitation program after coronary artery revascularization surgery. The patient had positive family history of cardiovascular diseases (CVD), but no personal history of other cardiovascular conditions or cardiometabolic syndrome. He was a nonsmoker. Physical examination revealed a status of anxiety, tachycardia, and mild dyspnea. Blood test showed complete blood count within normal values, with a slightly elevated erythrocyte sedimentation rate (ESR) (normal values for men < 50 years: 0-15 mm/hour), normal levels of lipid profile, fasting blood sugar (FBS) and glycated hemoglobin (HbA1c) indicating a good short-term and long-term control of blood sugar levels. Kidney function, liver function and hydro-electrolytic balance were normal. On admission, the only abnormal findings were the biological markers for myocardial necrosis - CPK 210 U/L, CK-MB 19.3 U/L and Troponin T 2.03 ng/ml. Resting electrocardiogram (ECG) revealed ST segment elevation in anteroseptal precordial leads (V1-V4) (fig. 1). Apart from ST elevation, a pathological Q wave (0.06 seconds wide, and a depth > ¼ height of R-wave it precedes) in V1-V3 precordial leads. Heart rhythm was regular, but on sinus tachycardia of around 110 beats per minute. The normal electric heart axis (QRS axis) was preserved.

Coronarography angiography showed no injury to the left main artery (LM) and left circumflex coronary artery (LCX), but revealed a 60% thrombotic occlusion of the left anterior descending artery (LAD) (fig. 2).

![Fig. 1. ECG - anteroseptal ST segment elevation myocardial infarction](image1)

![Fig. 2. Coronary image of 60% LAD obstruction](image2)
Two months later the patient presented for cardiac rehabilitation program. Clinical assessment on admission to the rehabilitation clinic showed: normal weight (body mass index 24 kg/m²), resting blood pressure (BP) of 100/55 mmHg and heart rate of 70 beats per minute. Dyspnea was the only remaining physical symptom. The 24-hour continuous BP monitoring revealed normal BP levels and normal dipper profile. The 2D transthoracic Doppler echocardiography showed mild tricuspid regurgitation, mild mitral regurgitation, hypokinesis of the basal segment of the interventricular septum, and apical akinesis of the anterior wall. Resting electrocardiogram showed chronic anteroseptal myocardial infarction (fig. 3).

Laboratory test values during cardiac rehabilitation program showed normal red blood cell count; liver and kidney functions were normal as well, cholesterol parameters, sodium and potassium levels were within normal ranges. The immunology report revealed the presence of LA (lupus antibody) and aCL (anticardiolipin antibody) IgG 88 GPL/mL (IgG > 40 phospholipid units (GPL)/mL), aCL Ig M 100 MPL/mL (Ig M >99 phospholipid units (MPL)/mL).

**DISCUSSION**

Antiphospholipid syndrome comprises a heterogeneous group of autoimmune diseases. These conditions are characterized by recurrent arterial or venous thrombosis, or both, and/or pregnancy morbidity, as well as by the presence of aPL antibodies. APS is classified as primary or APS associated to other diseases. Primary APS (PAPS) is defined by the presence of aPL antibodies, but no evidence of any underlying systemic autoimmune disorder (6).

In our case, a relatively young patient with no personal risk factors for myocardial infarction, we thought that an autoimmune disease could be responsible for the coronary thrombosis. The positive antiphospholipid antibodies supported the diagnosis of antiphospholipid antibodies syndrome.

The clinical diagnosis of APS is supported by the laboratory findings, as the main clinical features of thrombosis and pregnancy morbidity also occur in many other diseases. In clinical settings, the standard enzyme-linked immunosorbent assay (ELISA) gives a large variation in antibody positivity, because there are no standardized kits. Studies conducted on the compared to commercial ELISAs showed similar performance and results between laboratories in detecting IgG/IgM aCL and IgG/IgM aβ2GP1 autoantibodies (7-12).
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As for cardiac manifestations in APS, they may range from pulmonary hypertension, intracardiac thrombosis, to dilated cardiomyopathy, coronary artery disease and valvular heart disease (13-15). Although coronary artery disease and restenosis following percutaneous coronary intervention (PCI) are less common, the risk of their occurrence is increased in APS patients compared to other conditions. The pathophysiological explanation for the fact that APS patients are predisposed to stent thrombosis resides on APS predilection for thrombotic events. In addition, unresponsiveness to aspirin and clopidogrel can predict the risk of stent thrombosis (16).

As in adults and elderly, in young adults’ atherosclerosis is the main cause of coronary events. Other causes of coronary heart disease are related in about 20% of cases to nonatherosclerotic factors - such as autoimmune diseases, connective tissue disorders, or coronary abnormalities. However, cases of systemic lupus erythematosus (SLE) and antiphospholipid syndrome (APS) may present different onset clinical manifestations. In SLE, there are no age-based differences regarding the prevalence of myocardial infarction; conversely, this major coronary event is unusual in APS and it might appear during the progression of the antiphospholipid syndrome.

The phenotypes of vascular damage in APS are characterized by the strong interactions between circulating aPL and cell surface molecules of target cells, primarily endothelial cells and platelets. The molecular basis of APS is still largely unknown. Endothelial cells produce nitric oxide, factor that promotes vascular health by regulating the physiological processes (thrombosis, endothelial-leukocyte interaction, vascular cell migration), and by modulating the vascular tone.

In all young patients with cerebral infarction, myocardial infarction, pulmonary embolism, recurrent miscarriages, and unexplained low platelet count, the high likelihood of antiphospholipid antibody syndrome should be considered. Among the form of APS associated to other diseases are various systemic autoimmune syndromes, especially systemic lupus erythematosus (SLE) (17).

CONCLUSIONS
This case highlights the importance of considering in the emergency department the prothrombotic states, such as SLE and APS, in adult patients with no prior cardiovascular risk factors presenting with acute myocardial infarction due to unexplained intracoronary thrombosis.

Early diagnosis of catastrophic APS and aggressive therapies are essential to help such patients from succumbing to this potentially fatal condition.

This syndrome should be suspected more frequently in all young patients than in adult patients, especially if they do not present any cardiovascular diseases and develop myocardial infarction.

REFERENCES


