CASE REPORT

Tako-Tsubo like Syndrome Triggered by Meperidine

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SUMMARY

We present a case of "inverted Tako-Tsubo" syndrome in a woman sedated with meperidine before undergoing a colonscopy. We discuss possible etiology of this ventricular dysfunction.

KEY WORDS:
Cardiomyopathy; Emotional stress; Tako-Tsubo; Anaphylaxis; Meperidine

INTRODUCTION

The term Tako-Tsubo cardiomyopathy refers to a specific pattern of ventricular contractile dysfunction that generally occurs after emotional stress, but also after different types of non-emotional stress; the syndrome is characterized by the abrupt onset of angina-like chest pain, ECG changes that typically demonstrate ST-segment elevation, diffuse T wave inversions and abnormal QS-wave development, discrete wall motion abnormalities, most often involving the apex and limited myocardial enzyme release relative to the extent of ventricular dysfunction.

We describe a case which shows some typical features of Tako-Tsubo syndrome such as electrocardiographic and echocardiographic; moreover the occurrence of prolonged chest pain and the limited release of cardiac enzymes. In contrast to the majority of patients affected by this cardiomyopathy, we did not observe apical ballooning, but instead the wall motion abnormalities involved the basal and mid segments of the left ventricle, like it has been recently described in some cases of a variant form of Tako-Tsubo's syndrome [1].

CASE REPORT

A 54 year-old woman undergoing sedation for a colonoscopy, diagnostic for stipsis in anaemia, suddenly developed chest pain and arterial hypotension (70/ 40 mmHg) after she had been given parenterally 50 mgs of meperidine. Together with hypotension there was occurrence of sustained ventricular tachycardia, treated successfully with amiodarone.

The hypotension was effectively treated by normal saline infusion; when the electrocardiographic monitoring showed a stable sinus rhythm (heart rate 70 beats per minute) there was the presence of ST elevation in lead D1 and aVL and V5-V6. Henceforth after haemodynamic stabilization the patient was transferred to our hospital in order to undergo a coronarography.

The patient reported a story of intense emotional stress and depressive status in the last two months, caused by the death of her mother.

Arrived at our hospital the laboratory parameters were within normal limits. Testing for cardiac necrosis markers revealed a mild increase of myoglobin, creatine kinase MB fraction and troponin T (myoglobin 151 micrograms/ L, peak CK-MB level was 22 micrograms/ L and peak troponin T level was 2,5 micrograms/L). Chest radiography was within normal limits. The echocardiogram showed and abnormal regional contractility with hypokinesis of the inferior, posterior and lateral basal and mid segments; the ejection fraction was 40%. Atrial, ventricular and septal sizes were normal.

The angiogram showed normal coronary arteries with TIMI flow score equal to 3 (figure 1); there was no evidence of vasospasm. Left ventriculography showed posterobasal and anterobasal akinesis (figure 2) without apical involvement, unlike the most typical form of Tako-Tsubo's syndrome [1].

Serial echocardiographic assessment of ejection fraction showed a rapid progressive improvement in left ventricular contractility: at discharge on 8th day the ejection fraction was 55%, with no regional wall motion abnormalities.

Serial measurements of the cardiac markers of necrosis showed normalization within 2 days.

DISCUSSION

Taking into account the sudden onset of the symptoms, the rapid improvement of the cardiac contractility and the absence of coronaric stenosis, we hypothesized an anaphylactic reaction to meperidine with cardiac involvement, mimicking Tako-Tsubo's syndrome.

Even though the sole symptoms and signs which she developed were cardiovascular collapse and hypotension, without cutaneous signs and bronchospasm and moreover we did not test the patient for IgE antibodies, however we cannot rule out anaphylaxys because of the hypotension and ventricular tachycardia which occurred soon after the administration of meperidine.

In fact the diagnosis of anaphylaxis is based primarily on clinical criteria and is valid even if the results of laboratory tests, such as serum total tryptase levels, are within normal limits. Besides positive skin test results or increased serum specific IgE levels to potential triggering allergens confirm sensitization but do not confirm the diagnosis of anaphylaxis,

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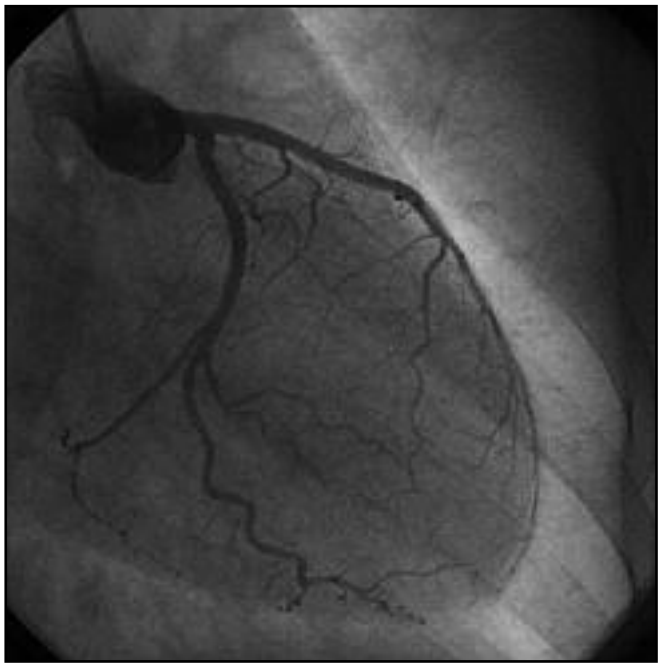

Fig. 1: Coronarography

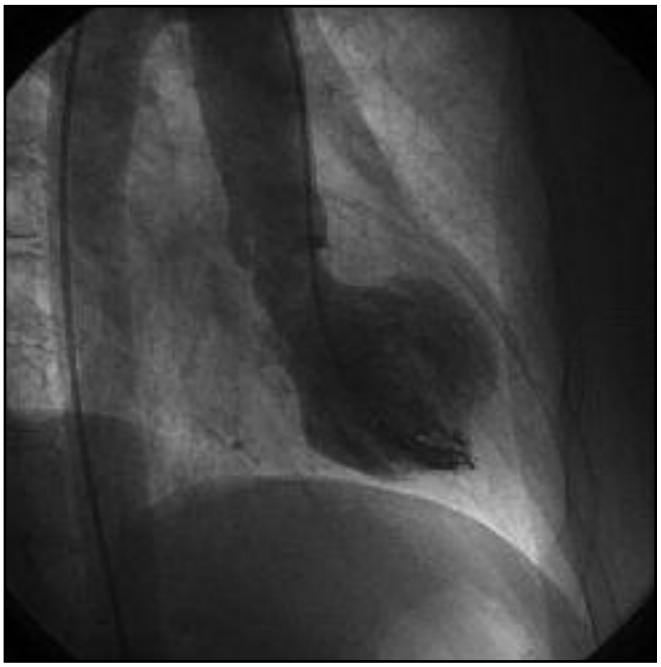

Fig. 2: Ventriculography

because asymptomatic sensitization is common in the general population. Important patient-related risk factors for severity and fatality include concurrent medications as well as other less well-defined factors such as emotional stress, which is the case of our patient under stress for the procedure per se and for a recent death in the family.

In addition to this it is well known that meperidine [2] can produce cardiovascular changes when administered parenterally in normal subjects as well as in patients with coronary artery disease [3]; in fact meperidine causes an histamine release significantly higher than when morphine or fentanyl are administered [4]; the plasmatic levels of meperidine are inversely correlated with blood pressure and directly correlated with heart rate and circulating adrenaline. Moreover meperidine has significant myocardial depressant effects, so to corroborate the hypothesis of anaphylactoid mechanism in our case.

Anaphylaxis is characterized by a chronotropic and inotropic effects and by the onset of tachyarrhytmias soon after exposure to specific allergens, typical histamine-dependent effects, followed by cardiodepressive effects and coronary spasm.

Although the presence of myocyte necrosis we ruled out myocarditis in the differential diagnosis of transient left ventricular dysfunction, because the plasma levels of inflammatory markers were within normal limits, the rapid onset of cardiac involvement, the mesoventricular ballooning, the absence of fever and of a preceding infection and finally because of the normal findings of the cardiac magnetic resonance.

CONCLUSION

To our knowledge this is the first time that a case of Tako-Tsubo like syndrome has been reported during an anaphylactoid reaction to meperidine. Recently a case of apical ballooning during anaphylaxis caused by sensitization toward peanuts has been described [5]. In conclusion we think that meperidine can be considered among the potential triggers for Tako-Tsubo's syndrome.

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