INTERNATIONAL JOURNAL OF HEALTH & MEDICAL RESEARCH
ISSN(print): 2833-213X, ISSN(online): 2833-2148
Volume 03 Issue 05 May 2024
DOI : 10.58806/ijhmr.2024.v3i05n13
Page No. 255-258

The Challenge of Clinical and Surgical Management of An Acute Myocardial Infarction Simultaneously with An Acute Compressive Neurological Syndrome Due to Pituitary Adenoma: A Case Report

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SUMMARY: The term acute coronary syndrome represents a group of signs and symptoms in a patient who exhibits clinical and/or laboratory evidence of the occurrence of acute myocardial ischemia. This concept encompasses acute myocardial infarction, which represents the most important cause of death in Brazil and the world. Pituitary adenomas, in turn, are benign tumors, and are among the most common intracranial tumors, corresponding to 9 to 15% of intracranial tumors detected in autopsy series, and in radiological series, they can reach up to 22 to 23%. of cases. This study is a case report of the simultaneous occurrence of an acute myocardial infarction and an acute compressive neurological syndrome, due to pituitary adenoma, both serious, and the challenges encountered in making medical decisions regarding treatment priority. In daily practice, differentiating between urgency and emergency can be complex. In the case in question, although neurological compression implied the risk of irreversible vision loss, the team decided to prioritize the cardiac approach, to the detriment of the immediate attempt to preserve vision. The decision considered the imminent risk of death due to hemodynamic instability due to any decompensation during the neurological procedure.

KEYWORDS: Acute myocardial infarction. Pituitary adenoma. Urgency. Emergency. Case report.

INTRODUCTION

The expression Acute Coronary Syndrome (ACS) represents a group of signs and symptoms in a patient who exhibits clinical and/or laboratory evidence of the occurrence of acute myocardial ischemia, resulting from an imbalance between the delivery and need for oxygen to the heart [1]. This concept encompasses Acute Myocardial Infarction (AMI), which represents the most important cause of death in Brazil and the world, with the instability of the atherosclerotic plaque being the main pathophysiological aspect [2].

Pituitary adenomas are benign tumors and are among the most common intracranial tumors [3]. They correspond to 9 to 15% of intracranial tumors detected in autopsy series, and in radiological series, they can reach up to 22 to 23% of cases [4]. They are classified according to their cellular origin (gonadotroph , corticotroph , lactotroph , somatotroph or thyrotroph) and size (microadenoma when smaller than 1 cm, and macroadenoma when greater than or equal to 1 cm). Around 65 to 70% of adenomas secrete high amounts of hormones, and the remainder are “silent”, or clinically non- functional [5].

This work seeks to report a case of an acute myocardial infarction, the treatment of which occurred simultaneously with the precipitation of an acute compressive neurological syndrome, generated by a pituitary adenoma, which, like the cardiac condition, required immediate management. The objective of this report is to discuss the medical challenges in deciding treatment priorities, as well as the factors that must be considered in the context of these two pathologies. This case report followed the precepts of the CARE guidelines .

METHODOLOGY

To prepare this report, data were collected from the medical records , which are located in a tertiary hospital in the State of Santa Catarina. Access to the medical records was previously authorized by the patient, through the Free Informed Consent Form (TCLE), by the institution's records guardian and by the Research Ethics Committee (Consubstantiated Opinion number 5,777,994). The data obtained were discussed in light of scientific literature.

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CASE REPORT

Male patient, 55 years old, with systemic arterial hypertension (SAH), dyslipidemia, hypothyroidism and hypopituitarism, with a history of pituitary adenoma resection surgery. He was admitted to the emergency room of a tertiary hospital, after being referred from the Emergency Care Unit (UPA) complaining of post-exertional chest pain, radiating to the left upper limb and improving upon rest.

An electrocardiogram (ECG) was performed, which showed no changes, and serial serum levels of myocardial necrosis markers were performed, which showed an increase (Table 1). The patient was treated for AMI (Chart 2) and admitted for cardiac catheterization (CAT), performed the following day. CAT demonstrated coronary arteries with significant three-vessel atheromatosis, with indication for Myocardial Revascularization Surgery (REVASC). On the same day, the patient presented hematemesis and epistaxis, controlled by the team, and was kept hospitalized, awaiting a place to undergo cardiac surgery, and under anticoagulation - Enoxaparin at a dose of 160 mg per day, subcutaneously (SC) on the 2nd day of hospitalization .

On the 15th day of hospitalization, he developed intense occipital headache , associated with nausea and vomiting, progressing to visual blurring on the 16th day. On neurological examination, he presented Glasgow 15 and isochoric and photoreactive pupils . A Computed Tomography (CT) of the skull was performed, which showed an indeterminate oval formation next to the left pituitary/internal carotid. There were no signs of acute hemorrhage.

Therefore, an arterial Magnetic Resonance Angio (MRI) of the brain was performed, which showed a solid sellar and suprasellar lesion , centrally located and paramedian to the left, causing slight displacement of the left internal carotid artery, measuring approximately 2. 2 x 1.8 x 1.7 cm. On the 17th day of hospitalization, the patient presented a new episode of large amounts of emesis , and on neurological examination he presented left ophthalmoplegia and visual impairment. Given the patient's clinical history, these findings were suggestive of macroadenoma with an apoplexy component. Laboratory tests demonstrated a non-functional profile of this tumor. The anticoagulation dose was reduced (Enoxaparin 40 mg per day, SC).

A medical board comprising neurosurgery, anesthesiology and cardiac surgery was convened to discuss the safe management of the patient. Neurosurgery indicated emergency surgery to resect the pituitary macroadenoma , via nasal endoscopic surgery, in order to prevent the irreversible loss of vision on the left, and decompress the oculomotor nerve. However, the pre-anesthetic evaluation indicated a high surgical risk in the face of coronary artery disease. severe three-vessel disease , and suggested performing REVASC first.

The teams reached a consensus in favor of cardiac intervention as a first step, followed by neurosurgery as soon as the patient was stable. On the 19th day of hospitalization, REVASC was performed, with the creation of four bridges. There were no cardiac complications, and in the postoperative period the patient presented, on physical examination, rhythmic, normophonetic heart sounds, without murmurs and sinus rhythm on the cardioscope. On the same day, upon neurological examination, the patient developed anisocoria and absence of photomotor reflex , with persistence of ophthalmoplegia on the left.

macroadenoma was resected via a transsphenoidal approach . After the procedure, upon physical examination, the patient presented persistent anisocoria and the absence of photomotor reflex , left temporal hemianopsia, eyelid ptosis and deficit of the third cranial nerve, in the left nasal adduction. The patient was discharged from hospital on the 30th day of hospitalization, with no cardiovascular changes on physical examination and reporting improvement in vision, despite the persistence of neurological changes identified after the resection procedure.

DISCUSSION

Pituitary apoplexy is the occurrence of hemorrhage and/or acute infarction in the pituitary gland, which causes a sudden increase in intrasellar volume , which can culminate in headache , cranial nerve palsy, visual impairment, incontinence and even hormonal deficiencies. Often, this condition is related to an adenoma, with non-functioning macroadenomas and prolactinomas being the most prone. Furthermore, apoplexy can occur in association with anticoagulant therapy, hypertension, diabetes mellitus, among others [6].

The patient in question, in addition to having SAH and having a previous history of pituitary adenoma, upon being admitted, received anticoagulation for 15 days, in order to avoid thrombotic events, at which time neurological symptoms became prominent.

Visual impairment results from the compressive effect caused by the adenoma on the optic chiasm, optic tracts or optic nerves, and if intense or prolonged it can culminate in irreversible nerve atrophy and permanent vision impairment. Motor ocular deficit, in turn, is caused by compression of the oculomotor (NCIII), trochlear (NCIV) and abducens (NCVI) cranial nerves, leading to paralysis of the ocular muscles, which presents as ophthalmoplegia, ptosis, strabismus and diplopia [6][7].

Therefore, it is likely that the compressive symptoms evidenced in our patient occurred due to the precipitation of apoplexy in the macroadenoma , which was not clinically evident until now. The bleeding, favored by anticoagulation , possibly formed a local hematoma, which led to compression of adjacent structures, in this case the NCIII, NCIV and NCVI cranial nerves and the optic chiasm. This explains the visual loss and motor deficits in the ocular muscles.

The approach to urgencies and emergencies, although there is no conceptual accuracy of these terms in the literature, is widely considered that both clinical situations are conditions that require immediate medical intervention so that serious harmful outcomes do not occur. In emergencies, however, there is a danger of death, while the term urgency encompasses other serious situations, in which there is no such threat [8].

In this case, compression of the optic chiasm and oculomotor nerve needed immediate reversal, or the patient could lose vision. Even given the severity of the condition, it did not pose a risk of death, being classified as a medical emergency. On the other hand, even if the patient was stable from a hemodynamic point of view, if there were any decompensation in this context, mainly as a result of any procedure or effect of any drug during the neurological intervention, the presence of severe coronary insufficiency could result in an emergency. medical care due to the risk of death.

Taking the above into account, the medical teams involved in the patient's management decided, by consensus, to prioritize the cardiac approach first, to the detriment of the immediate attempt to preserve vision.

CONCLUSION

In daily medical practice, the differentiation between urgency and emergency can be complex, and the current literature lacks further studies in this regard. In the case in question, although neurological compression implied the risk of irreversible loss of vision, there was no risk of death, being classified as a medical emergency. On the other hand, the presence of severe coronary insufficiency could culminate in potentially fatal hemodynamic instability, given any decompensation during neurological surgery. Therefore, the medical team decided to prioritize the cardiac approach first, to the detriment of the immediate attempt to preserve vision.

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Tables (Supplementary Material)

Table 1. Measurement of myocardial injury markers.

Highlighter	**1st collection**	**2nd collection**	**3rd collection**
Troponin	16 pg / mL	14.4 pg / mL	26.8 pg / mL
CPK	97 U/L	782 U/L	Not included
CKMB	32 U/L	95 U/L	Not included

Table 2. Medications administered on the first day of hospitalization.

Medicine	**Dose**	**Route of Administration**
Acetylsalicylic acid	100mg	Oral
Ticagrelor	90mg	Oral
Enoxaparin	60mg	Subcutaneous
Spironolactone	25mg	Oral
Omeprazole	40mg	Intravenous