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Cardiology

PARADOXICAL EMBOLISM OF THE CENTRAL ARTERY OF THE RETINA REVEALING A THROMBUS LANDLOCKED IN THE OVAL FORAMEN

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ABSTRACT Paradoxical embolism is a rare cause of systemic arterial accidents, in particularly cerebral arteries. We report a rare case of a young man with central retinal artery occlusion linked to paradoxical embolism, confirmed on echocardiography by the detection of the thrombus embedded in theforamen oval. Surgical thrombectomy with closure of theforamen oval has been indicated. The visual prognosis is generally poor.

KEYWORDS : paradoxical embolism, oval foramen, landlocked thrombus, central retinal artery occlusion

INTRODUCTION:

Paradoxical embolism through a patent foramen oval (FOP) is a rare cause of stroke, in this case of occlusion of the central retinal artery occlusion (CRAO) [1, 2, 3]. We present the case of an OCRA related to a paradoxical embolism, diagnosed by the detection of a thrombus during its passage through the FOP.

CASE REPORT:

Twenty days after orthopedic treatment for a severe sprain of the left ankle, a 43-year-old patient presented to the emergency room for a sudden decrease in visual acuity in the right eye, observed on waking in the morning. During the emergency eye exam, the visual acuity of the right eye was limited to bright perception and 10/10 to the left eye. Ophtalmologyexamination revealed non-reactivedilated pupil. Examination of the background revealed ischemic white retinal edema with a cherry red macula (Figure 1). Fluorescein angiography revealed a major circulatoryslowdown, with no choroidal delay (Figure 2). The diagnosis of right CRAO was retained.In front of this clinical picture, a clinical and paraclinical cardiovascular assessment was carried out in search of a cardio-embolic origin. The cardiac examination showed a stable hemodynamic state with a blood pressure of 130 / 80mmHg in both arms, a pulse rate of 86 beats per minute. The peripheral pulses were present and symmetrical. The rest of the clinical examination, including pulmonary and neurological, was unremarkable.The electrocardiogram was recorded in a regular sinus rhythm, without repolarization, conduction or rhythm disturbances. The transthoracic and transesophageal echocardiography showed normal heart valves without any stenosis or leakage. Normal sized right and left heart chambers. Good biventricular systolic function. Systolic pulmonary arterial pressure at 38mmHg. A mass in the right atrium hanging from the atrial septum, mobile, corresponding to a thrombus passingthrough the foramen oval without aneurysm of the atrial septum (Figure 3). Thus, the diagnosis of a paradoxical embolism of the central artery of the retina of the right eye was made. The hypothesis of a paradoxical embolism was confirmed by the presence of sequelae of the left common femoral vein thrombosis.The patient underwent a surgical thrombectomy with closure of the oval foramen. The post-operative follow-up was simple with the initiation of direct oral anticoagulant therapy with Rivaroxaban for six months.

DISCUSSION:

The permeable foramen oval is defined by the persistence, after birth, of communication between the two atria. This communication, essential during fetal life, is obliterated after birth in the vast majority of cases. However, the persistence of a passage through the atrial septum exists in about a quarter of the normal adult population [3].Paradoxical embolism is a rare cause of ischemic stroke. It is due to a systemic embolization of a clot from the venous circulation via a FOP. The prevalence of FOP in a population under 55 and having presented a cryptogenic stroke is 30 to 54% [4, 5, 6].

FOP is generally asymptomatic, and occasionally it may be responsible for a paradoxical systemic embolism, including cerebral, exceptionally ocular, known as cryptogenic stroke. This risk is more significant in subjects under 55 years of age, and when FOP is associated with an interauricular septum aneurysm (IASA) [7]. On the other hand, the CRAO constitutes a rare but serious ophthalmological emergency, it affects approximately 1 case / 10,000 / year [8]. It requires both urgent therapeutic treatments, and a precise etiological diagnosis, considering the vital and / or functional risk linked to an embolic etiology and the risk of bilateralization linked to an arteritic etiology. Several studies have shown that cardiovascular risk factors (including hypertension and diabetes) and thrombophilia are the main risk factors for CRAO [9]. The role of FOP in the genesis of cryptogenic strokes and the various systemic embolic accidents generally remains suggestive through the various clinical studies. However, the discovery of a thrombus passingthrough the FOP allows to carry with certainty the diagnosis of paradoxical embolism in the systemic circulation. In this context, a thrombectomy associated with a surgical closure of the FOP is indicated.Regarding the therapeutic management of CRAO, no treatment has demonstrated any efficacy. Indeed, irreversible retinal lesions appear from 90 minutes of arterial occlusion; the therapeutic window is therefore so narrow that it is often too late for effective treatment to be initiated. Some claim that any treatment undertaken after 4 hours of arterial occlusion has no scientific basis [10].These are non-specific measures: eye massage, puncture of the anterior chamber, vasodilators, carbonic anhydrase, hyperbaric oxygen therapy and anticoagulants [11]. Intravenous or in situ fibrinolysis of the ophthalmic artery should be performed within 6 hours or even less than 4 hours after the onset of symptoms [10]. In our patient, fibrinolysis was not discussed because it was impossible to specify the exact time of onset of the symptoms observed when waking up in the morning.The course and prognosis of these embolic eye accidents is generally disappointing [12]. In the case of our patient, no improvement in visual acuity was noted six months after the accident.

CONCLUSION:

The CRAO in connection with a paradoxical embolism, the diagnosis of which is confirmed by the detection of a thrombus landlocked in the oval foramen, is a rare clinical entity. This situation with very high embolic risk (both systemic and pulmonary) is associated with high mortality and its treatment is based on surgical thrombectomy associated with the closure of the FOP. Finally, any CRAOmust be managed as a stroke in the acute phase, with the objectives of early reperfusion on the one hand, and the institution of secondary prevention on the other.

Figure 1: Photo of the fundus: Retina of whitish colorwith an appearance of a cherry red spot on the macula

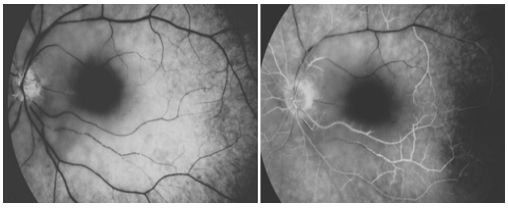

Figure 2: Fluorescein angiography of the fundus: extreme delay in filling of the retinal central artery branches in the early period, and lengthening of the arteriovenous filling time in the late period

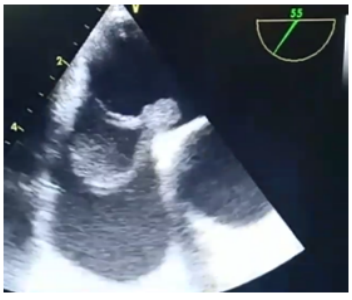

Figure 3: Enclosed thrombus in the foramen oval on transesophageal echocardiography

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