Short communication

Central retinal artery occlusion and infective endocarditis: Rigor does matter

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**Abstract**

Clinical case: A patient with acute amaurosis due central retinal artery occlusion (CRAO), who had mitral regurgitation and Streptococcus viridans positive blood cultures. Using transesophageal ultrasound, the patient was diagnosed with native valve infective endocarditis without fever, and with loss of vision as the only symptom.

Discussion: CRAO due to infective endocarditis is rare and there are few cases reported in the literature. Semiology and a systematic and comprehensive study of patients with this ophthalmological pathology help uncover serious underlying medical conditions. Infective endocarditis has many different forms of presentation and a high clinical suspicion is often required to reach a diagnosis.

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Oclusión de la arteria central de la retina y endocarditis infecciosa: el rigor sí importa

**Resumen**

Caso clínico: Paciente con amaurosis brusca debido a oclusión de arteria central de la retina (OACR), en el que se objetivó insuficiencia mitral y hemocultivos positivos para Streptococcus viridans. Con el estudio de ecografía transesofágica, se diagnosticó de endocarditis infecciosa subaguda sobre válvula nativa mitral que cursó sin fiebre y con la pérdida de visión como único síntoma.


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**Introduction**

Central retinal artery occlusion (CRAO) as an expression of infectious endocarditis (IE) is infrequent as it expresses in less than 1% of patients.

**Case report**

Male, 64, who visited due to sudden amaurosis in the right eye, with CRAO diagnostic suggested after ophthalmological examination (Fig. 1). Patient history comprised allergy to penicillin, arterial hypertension, dyslipemia, obesity and tobacco smoking habit. The patient was in treatment with enalapril, simvastatin and clopidogrel. Heart auscultation revealed systolic murmur grade III/VI in left sternum edge irradiated toward the armpit. Blood analysis produced 39 mm/h VSG, PCR 4.27 mg/l, with normal hemogram, biochemistry and thyroid function. ANA, anti-DNA and ANCA were negative, in addition to the hyper-coagulability study.

The supra-aortic pathway Doppler (TSA) showed carotid atherosclerosis which was difficult to assess, for which reason angio-CT of TSA was performed which revealed 60–70% stenosis of internal right carotid. Despite these findings, transthoracic echocardiogram (TTE) was performed to search the embolic source, which showed degenerative signs in the mitral valve with slight mitral insufficiency. Transesophageal echocardiogram (TEE) evidenced vegetations over MV (Fig. 2).

The patient being without fever, 3 blood cultures were extracted, with Streptococcus viridans appearing in all samples. With a diagnostic of mitral subacute IE over native valve, the patient was treated with vancomycin and gentamicin with the usual dosage. Patient remained without fever throughout the admission, with negative control led cultures. Control TTE and TEE were performed, confirming the disappearance of vegetations, with slight-moderate IM as a sequel. Once the IE was resolved, the patient was referred to the outpatient cardiology department for follow-up.

**Discussion**

The various forms of presentation of IE give rise to a broad differential diagnostic. It is estimated that between 10% and 50% of clinical expressions are due to embolic phenomena caused by endocardiac vegetations although said phenomena in the nervous system are present with very small symptoms or no symptoms at all in up to 48% of patients. The main embolization risk factors are the type of microorganism (fungi or streptococci) and vegetations size. The area most frequently affected by embolism is the central nervous system, in approximately 15–20% (ictus, subarachnoid hemorrhage, abscesses, meningitis, etc.). Even though the first CRAO case described in medical literature in 1895 was caused by a subacute IE the percentage of retinal embolization in IE is not yet calculated although it is probably below 1% of patients. It usually affects the main artery, the branches thereof or the ciliary arteries, with the main symptom being visual loss. Other ocular expressions of IE are endophthalmitis, conjunctival hemorrhages,
Roth spots (due to immunocomplex deposits), retinal hemorrhages, retinal neovascularization, choroiditis, optic neuritis, among others. On the other hand, presentation of IE without fever, which is the most common symptom, can be seen in up to 10% of patients but, as in the present case, presentation with CRAO on its own in addition to mitral murmur is exceptional. The authors have not found any similar case in the literature.

CRAO is an infrequent disorder (1–10/100,000). Regarded as an “ictus”, its etiology is mainly atheroembolic carotid in patients over 60, while in younger patients its etiology is due to cardioembolic diseases such as auricular fibrillation, myxoma, congenital cardiopathy, intra-cavitary thrombus, ventricular aneurysm, endocarditis or valvular disorders. Even though there is no defined diagnostic algorithm for CRAO, the basic explorations in the study of this disease include electrocardiogram, chest X-ray, blood analysis (including acute phase reactants), TSA image studies and cardiac images. If the etiological study is not conclusive despite said explorations, it is advisable to carry out a thrombophilia and self-immunity study. Already in the 90s the value of TTE was evidenced for diagnostic as well as the prognostic classification of said entity. Sharma et al. stated that, regardless of age and cardioembolic risk, all CRAO cases should have TTE because echocardiographic anomalies have been demonstrated in up to half of these cases. Completing the study with TEE in doubtful diagnostics produces indisputable advantages as in the case described herein. TEE continues to be the most effective and productive test for studying IE and, as some authors have already proposed, it also offers large advantages in studying CRAO, and could become the test of choice in both cases.

The interest of this case lies in becoming familiar with CRAO as a complication of infectious endocarditis, the various clinical expressions of this disease and the importance of completing a systematic study in patients with CRAO because, despite observing carotid disease which would explain the clinic, the infectious condition described above was identified even though it could have gone unnoticed.

### Conflict of interest

No conflict of interests was declared by the authors.

### References