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NEUROLOGIC MANIFESTATIONS OF INFECTIVE ENDOCARDITIS

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Abstract
Infective endocarditis is an infection of the endocardial surface of the heart. Usually, it affects one or more heart valves or an intracardiac device. Neurologic events (silent or symptomatic) account for 20 to 40% of all patients with infective endocarditis.
We are presenting the case of a 57 -year- old man with cardiovascular risk factors admitted to our clinic for aphasia. His medical history included a recent stroke and small fiber neuropathy with a gradual onset for the past six months. Despite extensive investigations, no cause for strokes and neuropathy could be found. To identify a potential source of embolism, a transoesophageal echocardiography was performed. It revealed vegetation attached to both aortic and mitral valves. Blood cultures were positive for Streptococcus gallolyticus. The patient underwent emergency aortic and mitral valve replacement and a 6-week course of antibiotic treatment with ceftriaxone and gentamicin with the improvement of both aphasia and peripheral neuropathy.
Central nervous system complications such as encephalopathy, seizures, stroke or severe cerebral hemorrhage are commonly described in infective endocarditis, but peripheral nervous system involvement is rarely reported in the literature. Although no cause for neuropathy has been found, it is difficult to asses whether it was a complication of the infective endocarditis.
Keywords: *infective endocarditis, stroke, neuropathy.*

Internal Medicine

Clinical cases

Rezumat

Endocardita infecțioasă este o infecție localizată la nivelul endocardului. În general se referă la o infecție a uneia sau mai multor valve cardiace sau infecția unui device intracardiac. Asocierea cu evenimente neurologice, atât simptomatice, cât și silențioase survine la 20-40 % dintre pacienții cu endocardită infecțioasă.

Vă prezentăm cazul unui bărbat de 57 de ani, ce are cumul de factori de risc cardio-vascular, care se internează pentru apariția unei tulburări de limbaj. Asocia polineuropatie de fibre subțiri cu debut progresiv de aproximativ 6 luni, considerată de etiologie autoimună, AVC ischemic. În urma examenelor paraclinice exhaustive nu s-a putut identifica nici cauza polineuropatiei și nici cauza accidentului vascular cerebral.

În vederea excluderii unei etiologii embolic cardiace, s-a efectuat ecocardiografie transesofagiană care a evidențiat vegetație de mari dimensiuni atât la nivelul valvei mitrale, cât și la nivelul valvei aortice. Completarea demersului cu recoltarea de hemoculturi confirmă diagnosticul de endocardită infecțioasă cu Streptococcus gallolyticus. S-a intervenit chirurgical de urgență (proteză mecanică în poziție aortică și mitrală), cu completarea antibioterapiei timp de 6 săptămâni, ulterior cu evoluție favorabilă, cu ameliorarea atât a afaziei, cât și a neuropatiei.

Complicațiile nervoase centrale, precum accidental vascular cerebral, encefalita, meningita au fost frecvent asociate cu endocardita infecțioasă, dar interesarea sistemului nervos periferic a fost rar descrisă în literatura de specialitate. Deși nu a fost identificată o altă cauză pentru polineuropatia de fibre subțiri, este dificil de apreciat dacă aceasta a aparut ca o complicație a endocarditei infecțioase.

Cuvinte cheie: *endocardită infecțioasă, accident vascular cerebral, neuropatie.*

Introduction

Infective endocarditis is an infection of the endocardial surface of the heart that affects one or more heart valves or an intracardiac device[1].

Infective endocarditis can have a broad spectrum of neurological complications, in some cases, with devastating consequences[2, 3]. Neurologic events occur for 20 to 40% of all patients, often being the first sign of illness[3]. Usually, central nervous system complications such as stroke, cerebral haemorrhage, seizures, meningitis were described in infective endocarditis[2]. In contrast, peripheral nervous system involvement was rarely reported.

Case report

A 57-year-old man with cardiovascular risk factors presented to our clinic with sudden onset of aphasia (about 6 hours prior hospital admission). Regarding his medical history, he suffered another stroke a month ago for which antiplatelet therapy was started. Following the initiation of treatment he had developed upper gastrointestinal bleeding and had been subsequently treated in a gastroenterology department. His medical history also included, besides the stroke, a small fiber neuropathy. He underwent repeated neurological consultation. His symptoms were ongoing for the past six months and persisted despite administration of non-steroidal anti-inflammatory drugs, gabapentin, amitriptyline, duloxetine, ketamine, oxidone clorhidrate and prednisolone. Although the etiology of this condition was not known, despite the extensive investigations (complete blood count, erythrocyte sedimentation rate, renal, liver, thyroid function tests, serum vitamin B12 with metabolites, impaired glucose tolerance test, antinuclear antibody (ANA) titers, extractable nuclear antigens, p-ANCA and c-ANCA, rheumatoid factor, antineutrophil cytoplasmic antibodies, anti-SS-A, anti-SS-B antibodies, anti MOG antibodies,anti-GAD antibodies,anti-NSE antibodies, anti-NMDA antibodies, anti neuronal antibodies, antiphospholipid antibodies, serum complement, serum immunoelectrophoresis, cryoglobulins, hepatitis B antigen and antibody, hepatitis C antigen, anti-HIV antibodies, rapid plasma reargin test, CEA, CA 19.9, CA 72.4, AFP) an immune etiology was suspected. Therapy with intravenous immunoglobulin was initiated, but with no beneficial effect.

On current admission, the patient was afebrile and had a heart rate of 95 b.p.m and a blood pressure of 110/60mmHg. Physical examination findings were normal except for a grade IV/VI systolic murmur at the apex. Neurological examination showed aphasia, hyporeflexia and muscular atrophy. The ECG was normal and extensive blood work (including procalcitonin) showed only leukocytosis (12 000/mmc) and elevated C-reactive protein (60 mg/dL) . Blood cultures were negative. Computed tomography revealed an old lacunar stroke (Figure 1).

24-hour Holter monitoring, carotid and transcranial color Doppler results were unexceptional. However, to rule out a potential *source* of *embolism* , transoesophageal echocardiography was performed. It revealed a 20 mm vegetation attached to the anterior mitral valve associated with leaflet aneurysm and perforation along with a 5 mm vegetation attached to the left aortic cusp without evidence of right-to-left communication (Figure 2). Repeat blood cultures were positive for Streptococcus gallolyticus.

According to the Duke criteria, diagnosis of infective endocarditis was established. Being a patient with complicated infective endocarditis, he was reffered to a center with the presence of a multidisciplinary 'Endocarditis Team'. The patient underwent emergency aortic and mitral valve replacement and a 6-week course of antibiotic treatment with ceftriaxone and gentamicin with improvement of both aphasia and peripheral neuropathy. Because *S. gallolyticuss* endocarditis is strongly associated with colorectal cancer, a colonoscopy was performed. It revealed a tubular adenoma with low grade dysplasia.

Discussions

A low threshold for investigations to exclude infective endocarditis is therefore essential in a patient with neurological manifestations and persistent elevated biological markers of inflammation, even in the absence of fever. In such cases, echocardiographic assessment is paramount in establishing the correct diagnosis[3]. Neurological complications are a common and often major feature of infective endocarditis[2]. Rapid diagnosis and initiation of appropriate treatment are of major importance to prevent the reccurrence of neurological complications[2]. The ESC guidelines recommend the use of a multidisciplinary team („Endocarditis Team") in the care of these patients[3]. A team approach may lead to earlier diagnosis of infective endocarditis and a more individualised management strategy[3]. If extensive brain damage or intracranial hemorrhage is not present after a neurological event, cardiac surgery is generally not contraindicated[2 3].

Although no other cause for neuropathy has been found, it is difficult to asses whether it was a complication of the infective endocarditis. To our knowledge, this would be the first case linking Streptococcus gallolyticus to peripheral neuropathy. There are a few cases that describe the association between neuropathy and infective endocarditis. In 1989 Pamphlett and Walsh reported the case of a 64-yearold woman who developed septicemia and a generalized peripheral neuropathy[4]. Lazzarino et al., described a case of acute endocarditis with mononeuritis multiplex[5]. Another case of a 65-year-old woman who had infective endocarditis with S.aureus associated with tetraparesia and aseptic meningitis was reported by Corne et al.[6]. Also, H. ÇAKSEN et al. described the case of a child with infective endocarditis caused by Staphylococcus aureus associated with severe peripheral polyneuropathy[7]. A.Chiriac et al. reported a case of a 45 - year old man with infective endocarditis with Streptococcus mitis and peripheral neuropathy[8]. Vasculitis,

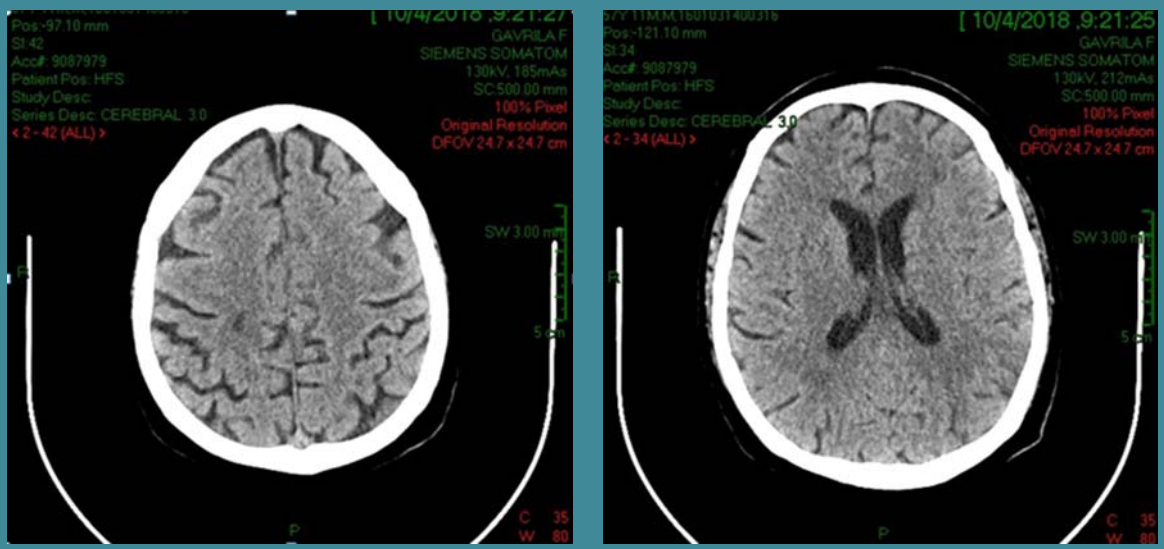

Figure 1. *Lacunar stroke*

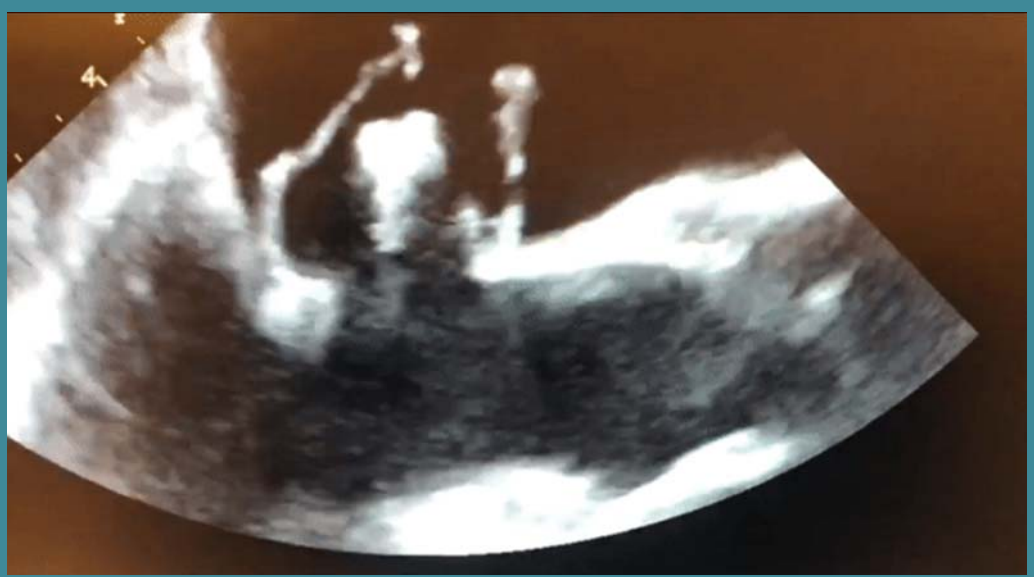

Figure 2. *Vegetation attached to the anterior mitral valve associated with leaflet aneurysm and perforation*

inflammatory lesions due to septic emboli could lie to the basis of the pathophysiological mechanisms responsible for neuropathy[4-7].
This case highlights an unusual presentation of infective endocarditis, with a debilitating neuropathy severe enough to mask the underlying disease.

Declaration of interest: *The author declare there is no conflict of interest*

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