





RAPIDLY PROGRESSIVE DEMENTIA DUE TO PRIMARY CENTRAL NERVOUS SYSTEM LYMPHOMA: A CASE REPORT

Demência rapidamente progressiva por linfoma primário do sistema nervoso central: um relato de caso

Eduardo Magalhães da Costa^a , Alessandra Ferrarese Barbosa^a ,
Camila Pourbaix Morisson Ferreira^a , Mariangela Perez^a , Roberto Alves Lourenço^a ,
Monique de França Silva^b , Flávio Assad Garcia^c 

ABSTRACT

Rapidly progressive dementias are conditions that worsening the patient's life; however they are not always considered during the investigation of dementia syndrome. This report describes the case of a patient with rheumatoid arthritis and chronic use of corticosteroid therapy, who developed rapidly progressive dementia within 5 months. During the investigation, the primary lymphoma of the central nervous system was evidenced as the cause of its dementia syndrome. Importantly, prolonged use of corticosteroids may be associated with a state of immunosuppression, which is a risk factor for the onset of central nervous system lymphoma.

KEYWORDS: mental status and dementia tests; lymphoma; elderly.

RESUMO

As demências rapidamente progressivas são condições que impactam a vida do paciente, entretanto nem sempre são consideradas durante a investigação da síndrome demencial. Este relato descreve uma paciente portadora de artrite reumatoide em uso crônico de corticoterapia que evoluiu com um quadro de demência rapidamente progressiva no período de cinco meses. Durante a investigação, evidenciou-se o linfoma primário de sistema nervoso central como causa de sua síndrome demencial. Faz-se importante destacar que o uso prolongado de corticoide pode estar associado a um estado de imunossupressão, o que é fator de risco para o surgimento do linfoma de sistema nervoso central.

PALAVRAS-CHAVE: classificação clínica das demências; linfoma; idoso.

^aServiço de Geriatria, Hospital São Vicente de Paulo – Rio de Janeiro (RJ), Brazil.

^bServiço de Patologia Cirúrgica, Hospital São Vicente de Paulo – Rio de Janeiro (RJ), Brazil.

^cServiço de Neurocirurgia, Hospital São Vicente de Paulo – Rio de Janeiro (RJ), Brazil.

Corresponding data

Eduardo Magalhães da Costa – Laboratório de Pesquisa em Envelhecimento Humano, Universidade do Estado do Rio de Janeiro – Avenida Marechal Rondon, 381, 2º andar – CEP: 20950-000 – Rio de Janeiro (RJ), Brazil. E-mail: eduardomagalhaes88@yahoo.com.br

Received on: 10/04/2019. Accepted on: 10/23/2019

DOI: 10.5327/Z2447-211520191900070

OBJECTIVE

To describe the case of a patient with rapidly progressive dementia syndrome caused by primary central nervous system lymphoma.

CASE DESCRIPTION

The female patient, 80 years old, was born and resided in Rio de Janeiro, RJ, Brazil. She came to the emergency service of a private hospital, presenting, according to relatives' reports, disorientation, apathy and adynamia, which had evolved over five months and had worsened in the last 30 days.

The disease began eight months before the emergency consultation, when the patient sought outpatient care for complaints of forgetfulness. The reported comorbidities were rheumatoid arthritis, diabetes mellitus and depression. She was taking metoprolol (25 mg), prednisone (5 mg), pantoprazole (20 mg), vildagliptin (50 mg), atorvastatin (20 mg) and escitalopram (10 mg). At that time, the conclusion of the comprehensive geriatric assessment was a subjective memory complaint. Complementary tests (blood count, renal function, electrolytes, hepatogram, blood glucose, thyroid stimulating hormone and free serum thyroxine, vitamin B12, syphilis serology and HIV) showed no abnormalities, while cranial MRI showed atherosclerotic microangiopathic changes in the white matter.

In five months, the patient evolved with cognitive and functional decline, characterized by temporo-spatial disorientation, falls and dependence in instrumental activities of daily living, with marked worsening in the last month, which led to her emergency consultation. Apart from acute conditions such as infection, hydroelectrolytic disorders and adverse effects of medications, hospitalization was indicated to investigate the condition, and the patient was followed by the same team that had performed the outpatient evaluation.

HOSPITAL INVESTIGATION

In the inpatient unit, because the patient had no history of fluctuating attention and had a complicated clinical picture, the hypothesis of delirium was discarded. Due to the history of falls, lack of laboratory alterations to justify her condition and a negative physical examination, a new cranial MRI was requested to assess causes such as subdural hematoma or ischemic stroke. Performed two days later, the examination revealed a large formation in the third ventricle, which is why new cognitive screening was not performed.

Neurosurgical evaluation indicated stereotactic brain biopsy. The histopathological diagnosis was primary central

nervous system lymphoma. Hematoxylin and eosin staining (Figure 1) identified a diffuse infiltration of atypical cells of varying sizes, sometimes multinucleated, forming cellular pleomorphism, in addition to frequent apoptosis and atypical mitoses, reflecting the malignancy of the lesion. The histogenesis of the lesion could not be established through routine staining, since it was a poorly differentiated and highly malignant. Immunohistochemical study was necessary to establish the lesion's lineage, which showed a diffusely positive labeling pattern for anti-CD20 antibody (Figure 1D) compatible with B-cell lymphoma.

During hospitalization, sepsis and hydroelectrolytic imbalance developed, leading to death.

DIFFERENTIAL DIAGNOSIS

Rapidly progressive dementia is a heterogeneous group of conditions that can evolve into an acute or subacute form, resulting in cognitive, neurological and psychological impairment. It is characterized by an evolution of less than two years. There is no consensus on the prevalence of rapidly progressive dementia, and its most common cause is Creutzfeldt-Jakob disease.^{1,2}

Rapidly progressive dementia can be divided into large groups: non-degenerative neurological diseases, infectious encephalopathies, alcohol-related encephalopathies, toxic encephalopathies, metabolic encephalopathies, immunological encephalopathies, secondary to depression, etc. Primary and metastatic brain tumors fall into the first group.¹⁻³

Primary brain tumors are most common in people over 65 years of age (about 50% of the cases), and the most frequent types, in descending order, are: meningioma, multiform glioblastoma, astrocytoma, acoustic neuroma, lymphoma and metastatic.^{2,4}

DISCUSSION

This report deals with a case of rapidly progressive dementia caused by central nervous system B-cell lymphoma in a woman on corticosteroid therapy for rheumatoid arthritis. The challenge was to establish the diagnosis with the necessary speed in a resource-constrained situation.

Central nervous system lymphoma is a rare cause of rapidly progressive dementia, but such a hypothesis should always be considered. It could be restricted to the cerebral parenchyma, meninges, spinal cord or eyeball. It most often presents as a secondary disease, but the primary form can also be found. Typically, central nervous system lymphoma is classified as B-cell non-Hodgkin lymphoma, whose high

cellularity and nucleus/cytoplasm ratio result in some of the most well-known radiological features of this tumor, such as the hyperdensity observed in cranial tomography.⁵

Lymphoma is the third most common central nervous system tumor, representing 4–7% of all neoplasms, behind only meningioma and glioma.^{6,7} The most prevalent age group is 45 to 70 years, predominantly above 60 years, with men slightly more affected. When diagnosed and treated early, the prognosis can be good.^{8–10} The established risk factors are congenital or acquired immunodeficiencies.¹¹

Older adults often present with cognitive dysfunction without focal deficits, suggesting dementia rather than expansive lesion. The initial symptoms, which result from the mass effect, local pressure and the distortion of adjacent structures, can manifest as irritability, emotional lability, forgetfulness, behavioral and personality changes, as well as gait and language changes.^{2,3}

The gold standard for tumor diagnosis is cranial MRI due to its high sensitivity and ability to delineate small tumors near the bones. Stereotactic biopsy is the gold

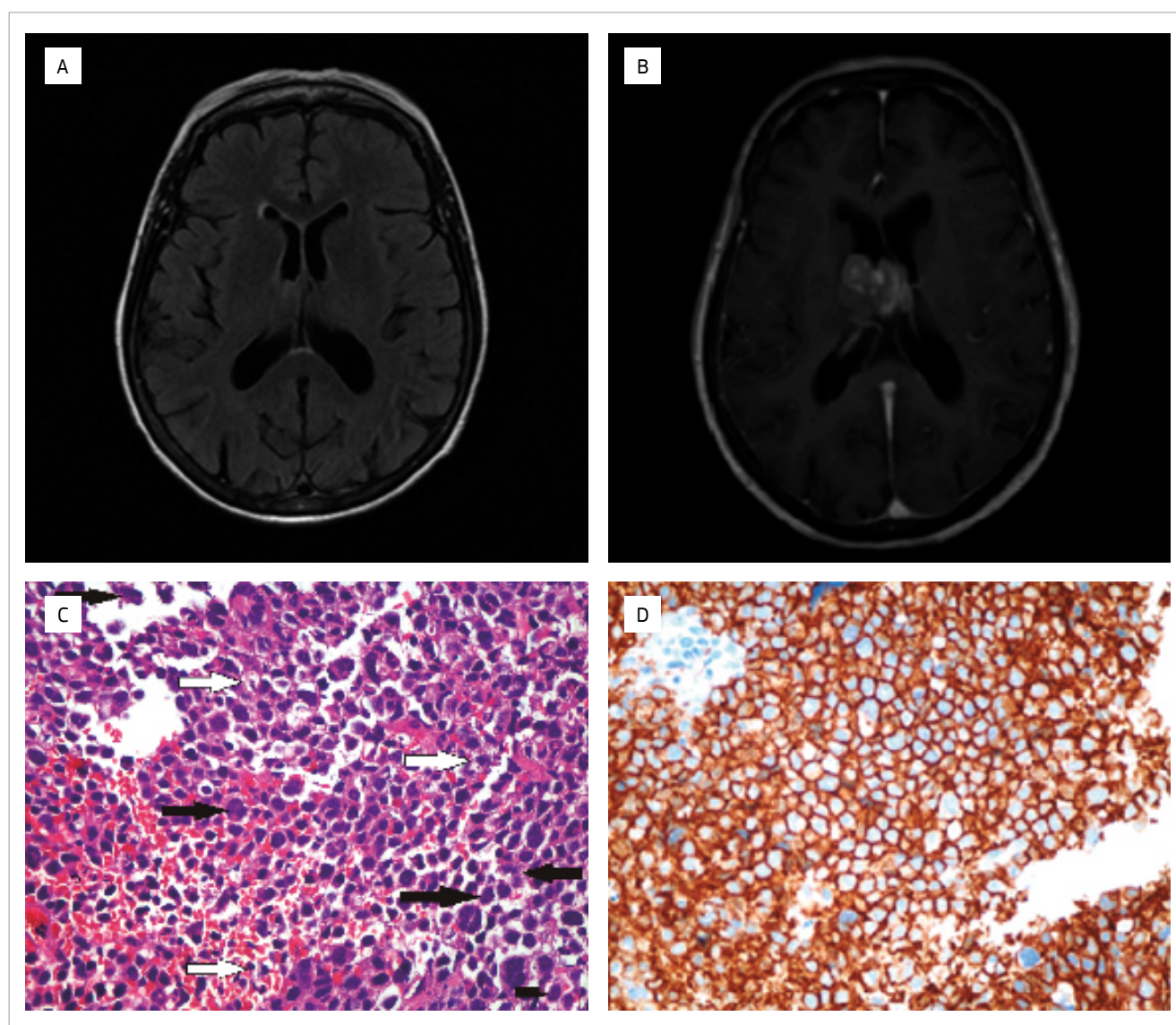


Figure 1 (A) Cranial nuclear magnetic resonance performed in outpatient investigation; (B) cranial nuclear magnetic resonance on admission, showing large, solid, lobulated formation, located at the midline, with the isocenter in the third ventricle and extending into lateral ventricles and, inferiorly, inseparable from the hypothalamus, without calcifications in its interior; (C) hematoxylin and eosin, 400x, shows diffuse infiltration of atypical cells of varying sizes, with marked cellular pleomorphism, frequent apoptosis (white arrows) and mitosis (black arrows), indicating a highly malignant neoplasm; (D) immunohistochemical study, diffusely positive anti-CD20 antibody, 400x, compatible with B-cell lymphoma.

standard for defining histological type. Diagnosis and treatment depend on the tumor type and the available resources (surgical, oncological or hormonal). It is important to point out that each case must be individualized by conducting a comprehensive geriatric assessment that takes the patient's functionality into account.^{2,12} In this case, HIV infection, which is associated with central

nervous system lymphoma, was excluded, and rheumatoid arthritis and chronic use of an immunosuppressant were identified.

It is important to consider primary central nervous system lymphoma as a possible etiology of rapidly progressive dementia, since early diagnosis and appropriate therapeutic measures could affect the outcome and prognosis.

REFERENCES

1. Shrestha R, Wuerz T, Appleby BS. Rapidly progressive young-onset dementias: neuropsychiatric aspects. *Psychiatr Clin North Am*. 2015;38(2):221-32. <https://doi.org/10.1016/j.psc.2015.01.001>
2. Caramelli P, Machado JCB, Barbosa MT, Bahia VS. Demências degenerativas não Alzheimer. In: Freitas EVD, Py L, editors. *Tratado de Geriatria e Gerontologia*. Rio de Janeiro: Guanabara-Koogan; 2016. p. 669-701.
3. Day GS, Tang-Wai DF. When dementia progresses quickly: a practical approach to the diagnosis and management of rapidly progressive dementia. *Neurodegener Dis Manag*. 2014;4(1):41-56. <https://doi.org/10.2217/nmt.13.75>
4. Djukic M, Wedekind D, Franz A, Gremke M, Nau R. Frequency of dementia syndromes with a potentially treatable cause in geriatric in-patients: analysis of a 1-year interval. *Eur Arch Psychiatry Clin Neurosci*. 2015;265(5):429-38. <https://doi.org/10.1007/s00406-015-0583-3>
5. Olson JE, Janney CA, Rao RD, Cerhan JR, Kurtin PJ, Schiff D, et al. The continuing increase in the incidence of primary central nervous system non-Hodgkin lymphoma: a surveillance, epidemiology, and end results analysis. *Cancer*. 2002;95(7):1504-10. <https://doi.org/10.1002/cncr.10851>
6. Brandão LA. Linfoma primário e secundário do sistema nervoso central: aspectos de imagem na ressonância magnética convencional e funcional. *Radiol Bras*. 2013;46:ix-x. <http://dx.doi.org/10.1590/S0100-39842013000200004>
7. Bellesso M, Bizzetto R, Pereira J, Beitler B, Pracchia LF, Chamone DAS. Primary central nervous system lymphoma. *Rev Bras Hematol Hemoter*. 2008;30(1):54-60. <http://dx.doi.org/10.1590/S1516-84842008000100013>
8. Schabet M. Epidemiology of primary CNS lymphoma. *J Neurooncol*. 1999;43(3):199-201. <https://doi.org/10.1023/a:1006290032052>
9. Ferreri AJ, Reni M. Primary central nervous system lymphoma. *Crit Rev Oncol Hematol*. 2007;63(3):257-68. <http://doi.org/10.1016/j.critrevonc.2007.04.012>
10. Herrlinger U, Schabet M, Clemens M, Kortmann RD, Petersen D, Will BE, et al. Clinical presentation and therapeutic outcome in 26 patients with primary CNS lymphoma. *Acta Neurol Scand*. 1998;97(4):257-64. <https://doi.org/10.1111/j.1600-0404.1998.tb00647.x>
11. Reis F, Schwingel R, Nascimento FBP. Central nervous system lymphoma: iconographic essay. *Radiol Bras*. 2013;46(2):110-6. <http://dx.doi.org/10.1590/S0100-39842013000200016>
12. Chassagne P, Landrin I, Neveu C, Czernichow P, Bouaniche M, Doucet J, et al. Fecal incontinence in the institutionalized elderly: incidence, risk factors, and prognosis. *Am J Med*. 1999;106(2):185-90. [https://doi.org/10.1016/S0002-9343\(98\)00407-0](https://doi.org/10.1016/S0002-9343(98)00407-0)

