

The clinical penetrance of Idiopathic Basal Ganglia Calcification (“Fahr’s Disease”)

A penetrância clínica das calcificações idiopáticas em núcleos da base (“Doença de Fahr”)

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ABSTRACT

Idiopathic basal ganglia calcification (IBGC, also known by “Fahr’s disease”) is a heterogeneous neuropsychiatric condition characterized by basal ganglia and extra-basal ganglia brain calcifications detected by computerized tomography (CT) and clinically manifested mainly by Parkinsonism, but often presenting psychosis and affective symptoms. There is a current debate about the real clinical implications of IBGC and the nosology of this phenotype. In order to define the threshold between the minimal calcification deposits and the clinical symptoms is important to study and report asymptomatic patients with extensive deposits. This article reports the clinical case of a 40 years old woman with extensive calcification in basal ganglia and thalamus, presently asymptomatic, non medicated and totally functional, working in a highly demanding job as an executive secretary at a multinational company in Brazil. We conclude that it is necessary to consider two levels of penetrance in IBGC; the penetrance for the calcification formations and the penetrance for the clinical manifestation.

KEYWORDS: Idiopathic Basal Gânglia Calcification, IBGC, Fahr’s Disease, computerized tomography.

RESUMO

A Calcificação idiopática em núcleos da base (CINB), também conhecida como “Doença de Fahr”, é um transtorno neuropsiquiátrico heterogêneo que se caracteriza por calcificações detectadas com tomografia computadorizada (TC) e clinicamente manifesta através de Parkinsonismo, mas frequentemente apresentando psicose e sintomas afetivos. Há um debate atual sobre a real implicância clínica das CINB e acerca da nosologia deste fenótipo. No intuito de estudar a definição dos limites entre a quantidade mínima de calcificações cerebrais suficiente para o desencadeamento de manifestações clínicas, é importante relatar casos de pacientes assintomáticos e com depósitos extensos. Este artigo relata o caso clínico de uma mulher de 40 anos de idade, com extensas calcificações em núcleos da base e tálamo e que se apresenta atualmente assintomática, não medicada e totalmente funcional, trabalhando em um cargo de grande demanda intelectual em uma multinacional no Brasil. Concluímos que é necessário considerar dois níveis de penetrância para a CINB: a penetrância para a formação de calcificações e outra para a manifestação clínica.

PALAVRAS-CHAVE: Calcificações idiopáticas em núcleos da base, CINB, “Doença de Fahr”, tomografia computadorizada.

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CASE REPORT

Idiopathic basal ganglia calcification (IBGC, also known by “Fahr’s disease”) is a heterogeneous neuropsychiatric condition characterized by basal ganglia and extra-basal ganglia brain calcifications detected by computerized tomography (CT) and clinically manifested mainly by Parkinsonism, but often presenting psychosis and affective symptoms.¹

There is a current debate about the real clinical implications of IBGC and the nosology of this phenotype.²

Calcifications and clinical symptoms are not always present simultaneously but previous studies measuring the total volume of calcification using an Electronic Planimeter and Coordinate Digitizer suggest a significantly greater amount of calcification in symptomatic patients compared to asymptomatic subjects.³

Oliveira et al (2004) found around 40% of clinically asymptomatic subjects, among 47 patients with calcifications, from 6 different pedigrees. The youngest subject of that study was 8 years old, already presenting small punctate calcifications but no clinical symptoms. This suggests that the calcifications might deposit progressively during several decades before triggering the symptoms.⁴

In order to define the threshold between the minimal calcification deposits and the clinical

symptoms is important to study and report asymptomatic patients with extensive deposits.

This article reports the clinical case of a 40 years old woman with extensive calcification in basal ganglia and thalamus, presently asymptomatic, non medicated and totally functional, working in a highly demanding job as an executive secretary at a multinational company in Brazil.

The calcifications were detected when she was 33 years old, during a neurological investigation for repetitive and intense headache episodes. By that time she was also presenting affective symptoms of mild intensity and taking a phytotherapeutic medication for anxiety and over the counter analgesics to self manage the headache symptoms. Complementary exams excluded metabolic causes of basal ganglia calcifications.

The computerized tomography was performed to better investigate the symptoms and an extensive area of calcification was detected at the basal ganglia and thalamus. The figure 1 shows images generated when the patient was 37 years old and presents calcifications with the tri-dimensional structure suggesting a pattern of deposition that follows the caudal portion of the caudate nucleus towards the occipital pole, with right and left volumes of 4451.282004 mm³ and 4923.708951 mm³, respectively

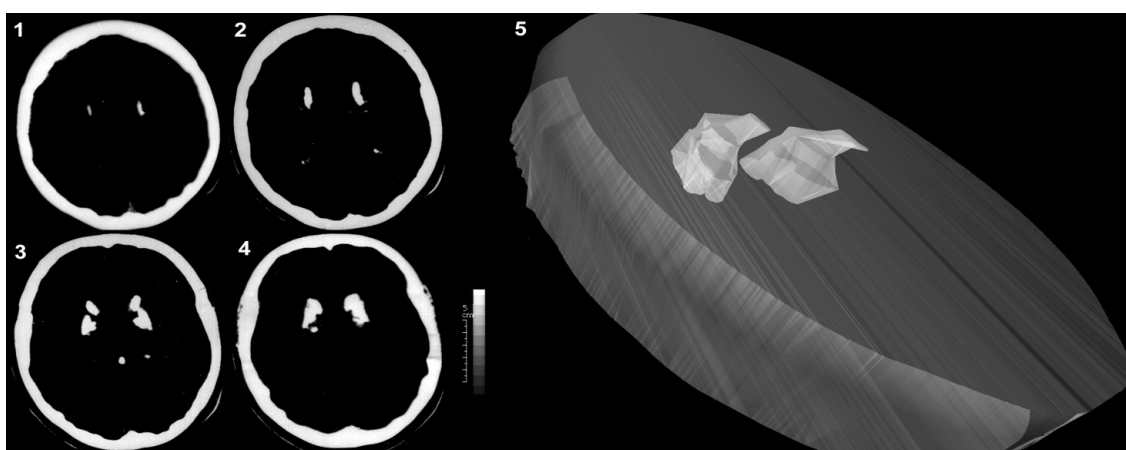


Figure 1. Images from the computerized tomography, showing basal ganglia calcifications (1-4) and a 3-D simulation of the whole calcification, using the program 3D-Doctor (5).

She started taking 75 mg of amitriptyline daily during 3 months, with good clinical response in both mood and headache symptoms, but discontinued the treatment by her own initiative.

The symptoms never prevented her from working or taking care of her family.

During that period she was taking oral contraceptive, which is widely known as causing headache as a side-effect.⁵

After three years of follow up she is asymptomatic and without any medication.

Her case raises several questions about the clinical penetrance of IBGC, an issue already addressed in other movement impairing disorders such as primary torsion disease and Huntington Disease.⁶

We conclude that it is necessary to consider two levels of penetrance in IBGC; the penetrance for the calcification formations and the penetrance for the clinical manifestation.

A crucial steps towards the definition of this issue will be the identification of a gene or genes involved in IBGC and the search for genetics markers related to IBGC is currently defining genetic candidates for this complex neuropsychiatric condition and will be determinant for the definition of its physiopathology.^{1,4,7}

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