Tidsskriftet Tidsskrift for Den norske legeforening

Fahr's disease or primary familial brain calcification?

LANGUAGE COLUMN

CHRISTINA WILHELMINA LEERINK

Christina Wilhelmina Leerink, 4th-year medical and research student at the Faculty of Medicine, University of Bergen, and a member of the research group MemBrain – Membrane Proteins in the Brain.
The author has completed the ICMJE form and declares no conflicts of interest.

HENRIETTE AKSNES

henriette.aksnes@uib.no
Henriette Aksnes, PhD in molecular biology, head of the research group MemBrain – Membrane Proteins in the Brain. The MemBrain research group is funded by the Trond Mohn Research Foundation (TMS2024STG01).
The author has completed the ICMJE form and declares no conflicts of interest.

The practice of naming diseases after the doctors who originally identified them is in decline. In line with international medical terminology, the condition known as Fahr's disease should instead be referred to as 'primær familiær hjerneforkalkning' in Norwegian, the direct translation of primary familial brain calcification.

Fahr's disease is a genetic condition characterised by dystonia, ataxia, parkinsonism and various neuropsychiatric symptoms, caused by symmetrical calcifications in the brain (Figure 1). Symptoms and clinical findings can range from minimal to life-threatening (1). There is currently no effective treatment for this progressive disease, but the latest research shows several medicinal avenues (2). Some studies also suggest that the condition may be more widespread than previously thought (3, 4). This brings up questions about what the disease should be called in Norwegian.

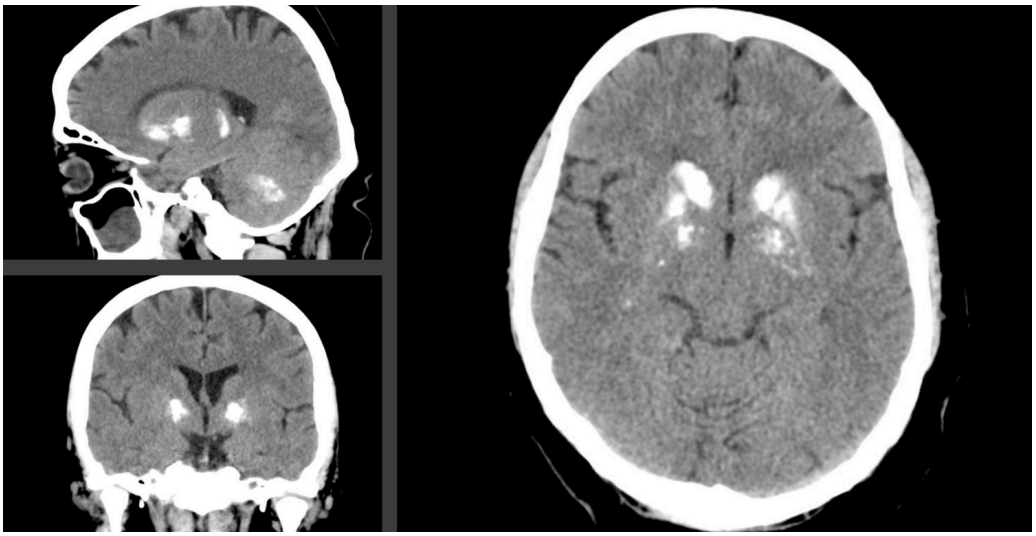

Figure 1 Selected slices from 3D computed tomography (CT) of the head and brain of a person diagnosed with Fahr's disease/primary familial brain calcification. Retrieved from radiopaedia.org (https://radiopaedia.org/cases/fahr-disease-10).

Relevant disease terminology

The first known case of this disease was described by a French doctor by the name of A. Delacour in 1850, i.e. 80 years before the German doctor Karl Theodor Fahr (1877 - 1945) published his case report in 1930 (1, 5). However, based on current knowledge, Fahr's case report now appears to be a secondary manifestation of hypoparathyroidism (6) rather than a primary form of brain calcification.

Eponyms can have a cultural value, but from a clinical perspective, it is more useful for disease names to convey pathophysiological disease mechanisms. In this case, it is also useful that the disease name differentiates the disease from secondary brain calcifications due to infection, metabolic disorders, or normal ageing (7).

Fahr's disease has often been referred to as *idiopathic basal ganglia calcification*, i.e. calcifications located in the basal ganglia without a known cause. This term is a good description of the anatomical location of the calcifications, but the word 'idiopathic' is no longer adequate as the condition has now been shown to have a genetic cause. Furthermore, the calcifications can also occur in other areas of the brain, such as the subcortical white matter, thalamus and cerebellum (8).

In recent years, the term *primary familial brain calcification* (in Norwegian, primær familiær hjerneforkalkning) seems to be the most commonly used in international medical literature. One advantage of this term is that it clearly refers to brain calcifications of genetic origin. A disadvantage is that it excludes cases arising from spontaneous mutations. Such cases can be referred to as primary bilateral brain calcification (5).

Recent research findings

Little is known about the consequences of calcifications in the brain. Recent research, including from Norway, has shown that the condition can be caused by pathogenic variants in several different genes (8-11). It has been suggested that the different genetic subtypes be referred to using the specific gene variant as a prefix (12), such as *NAA60*-PFBC, *SLC20A2*-PFBC, etc. Such precise nomenclature could contribute to more accurate diagnoses and explanations of diseases, which could have implications for future treatment choices. However, about half of all cases still lack a genetic explanation, and it is likely that additional gene variants will be identified. These should be incorporated into the screening panel on an ongoing basis to promote accurate diagnostics.

What should the condition be called in Norwegian?

In Norway, the condition is still referred to as Fahr's disease, including on the website of Norway's largest provider of health-related information, *Norsk helseinformatikk* (13) and until recently, also on the website of Frambu Resource Centre for Rare Diagnoses (14). Norwegian researchers have used the term 'primary familial brain calcification' in English-language scientific journals over the past 10 years (9-11).

In our opinion, the condition should be referred to as 'primær familiær hjerneforkalkning' in Norwegian, as this would promote knowledge and translational research collaborations. It can be difficult to change well-established disease names, but this disease is rare and not well-known in the population. 'Calcification' is a familiar term, and 'brain calcification' is likely to be easily understood by most people. In patient communication, the disease can be referred to as, for example, a hereditary form of brain calcification.

REFERENCES

1. Carecchio M, Mainardi M, Bonato G. The clinical and genetic spectrum of primary familial brain calcification. J Neurol 2023; 270: 3270–7. [PubMed]

2. Bekkelund ÅK, Siggervåg A, Aksnes H. Pi-ecing together brain calcification mechanisms for therapeutic advancement. Trends Mol Med 2025; 31: 206–8. [PubMed][CrossRef]

3. Nicolas G, Charbonnier C, Campion D et al. Estimation of minimal disease prevalence from population genomic data: Application to primary familial brain calcification. Am J Med Genet B Neuropsychiatr Genet 2018; 177: 68–74. [PubMed]

4. Chen S, Cen Z, Fu F et al. Underestimated disease prevalence and severe phenotypes in patients with biallelic variants: A cohort study of primary familial brain calcification from China. Parkinsonism Relat Disord 2019; 64: 211–9. [PubMed]

5. Ferreira LD, Mendes de Oliveira JR. The need for consensus on primary familial brain calcification nomenclature. J Neuropsychiatry Clin Neurosci 2018; 30: 291–3. [PubMed]

6. Klein C, Vieregge P. Fahr's disease–far from a disease. Mov Disord 1998; 13: 620–1. [PubMed][CrossRef]

7. Chelban V, Houlden H. White matter disorders with cerebral calcification in adulthood. Handb Clin Neurol 2024; 204: 111–31. [PubMed][CrossRef]

8. Balck A, Schaake S, Kuhnke NS et al. Genotype-phenotype relations in primary familial brain calcification: Systematic MDSGene Revie. Mov Disord 2021; 36: 2468–80. [PubMed][CrossRef]

9. Fjaer R, Brodtkorb E, Øye AM et al. Generalized epilepsy in a family with basal ganglia calcifications and mutations in SLC20A2 and CHRNB2. Eur J Med Genet 2015; 58: 624–8. [PubMed][CrossRef]

10. Røsby O, Legati A, Coppola G. Primary familial brain calcification in a Norwegian family, caused by a novel SLC20A2 gene mutation. J Neurol 2016; 263: 594–6. [PubMed][CrossRef]

11. Chelban V, Aksnes H, Maroofian R et al. Biallelic NAA60 variants with impaired N-terminal acetylation capacity cause autosomal recessive primary familial brain calcifications. Nat Commun 2024; 15: 2269. [PubMed][CrossRef]

12. Lange LM, Gonzalez-Latapi P, Rajalingam R et al. Nomenclature of Genetic Movement Disorders: Recommendations of the International Parkinson and Movement Disorder Society Task Force - An Update. Mov Disord 2022; 37: 905–35. [PubMed][CrossRef]

13. Norsk helseinformatikk. Fahrs sykdom. https://nhi.no/sykdommer/sjeldne-tilstander/f/fahrs-sykdom Accessed 6.12.2024.

14. Frambu. Bilateral striapallidodentat kalsinose. https://frambu.no/diagnose/fahrs-sykdom/ Accessed 6.12.2024.

Publisert: 22. April 2025. Tidsskr Nor Legeforen. DOI: 10.4045/tidsskr.24.0606