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Letter to the Editor: Maternally Inherited Diabetes and Deafness is Not Only Biorgan but Multiorgan

Carta ao Editor: A Síndrome Diabetes e Surdez de Transmissão Materna Não é Apenas Bi-Orgânica, mas Multi-Orgânica

Keywords: Child; Deafness/genetics; Diabetes Mellitus/genetics; DNA, Mitochondrial/genetics; Mutation

Palavras-chave: Criança; Diabetes Mellitus/genética; DNA Mitochondrial/genética; Mutação; Surdez/genética

Letter to the Editor,

We read with interest the article by Alves *et al* about a 55-years-old female with maternally-inherited diabetes and deafness (MIDD) due to the mtDNA-variant m.3243A>G.¹ In the index patient's family five other members were also clinically affected (II/5, II/1, II/2, II/3, I/1).¹ In addition to deafness and diabetes some family members also presented with hypertrophy cardiomyopathy (II/3, II/4, II/5), conduction-block (II/2, II/4), myopathy (II/4), depression (II/4), cognitive impairment (II/1, II/4, II/5), basal ganglia calcification (II/5), cerebellar atrophy (II/5), macular dystrophy (II/1, II/4, II/5), proteinuria (II/4, II/5), and muscle weakness (II/4).¹ We have the following comments and concerns.

Phenotypic features in MIDD-patients other than deafness and diabetes are not uncommon.² MIDD not only manifests as insulin-deficient diabetes and hearing loss but also as epilepsy, cerebellar ataxia, cognitive impairment, basal ganglia calcification, Parkinson syndrome, cerebral atrophy, stroke, maculopathy, retinopathy, cataract, hyporeninemic hypoadosteronism, hypothyroidism, short stature, hypoparathyroidism, Addison-disease, dilated cardiomyopathy,

WPW-syndrome, intestinal pseudoobstruction, pancreatitis, non-diabetic renal insufficiency, glomerulosclerosis, or myopathy.² Thus, MIDD is definitively a multisystem mitochondrial disorder (MIMODS) depending on the stage of the disease. At onset or during the first years only the pancreas and ears may be affected but with progression of the disease MIMODS may develop.

Since MIDs occasionally manifest with unilateral or bilateral basal ganglia calcification and since II/5 also presented with basal ganglia calcification, it would be interesting to know if T2-hypointensity in figure 2 of the case report was attributable to basal ganglia calcification or bleeding? Was there any evidence of calcification of the basal ganglia on cerebral CT? Did CT scans in other family members also show basal ganglia calcification?

Since clinical manifestations of the m.3243A>G mutation may strongly depend on the mutation load, it should be explained why cases II/2, II/3, and II/5, who had lower heteroplasmy rates than the clinically unaffected case III/1, nonetheless manifested clinically. Were heteroplasmy rates also determined in tissues other than lymphocytes? Did heteroplasmy rates vary between different tissues?

We do not agree with the statement that there is no curative therapy for MIDs.¹ Patients with MIDs not only profit from symptomatic measures and supplementary therapy but in a few cases also causal measures can be highly effective, such as in MNGIE or primary coenzyme-Q-deficiency.³

Overall, this interesting case study may profit from determination of heteroplasmy rates in tissues other than lymphocytes, from prospective investigations of subclinical or mild clinical manifestations of the mutation, and from symptomatic or supplementary therapeutic measures.

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