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CEREBRAL CHOLESTEROL GRANULOMA

Case report

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ABSTRACT - Intracranial cholesterol granulomas are rare lesions, and have been registered in petrous apex region. The presence of an intracerebral cholesterol granuloma is an uncommun event. We report the case of a 20-years-old woman who undergone craniotomy for resection of a temporal mass. Pathologic examination show a cholesterol granuloma.

KEY WORDS: granuloma, foreign-body, cholesterol, brain diseases.

Granuloma de colesterol cerebral: relato de caso

RESUMO - Granulomas de colesterol intracranianos são lesões raras, sendo observados na região do ápice petroso. A ocorrência de granuloma de colesterol intracerebral é um evento incomum. Relata-se o caso de mulher de 20 anos submetida a craniotomia para ressecção de processo expansivo temporal, com exame anátomo-patológico evidenciando um granuloma de colesterol.

PALAVRAS-CHAVE: granuloma de corpo estranho, colesterol, doenças cerebrais.

Cholesterol granulomas of the central nervous system are rare lesions and the petrous apex is the intracranial site most frequently involved. Cases of intracranial cholesterol granuloma have been reported associated with familial hypercolesterolemia and high serum lipid levels. With few cases reported in the literature, the pathogenesis of the event is until unclear.

The following report shows a case of a young woman with a temporal mass with cholesterol granuloma diagnosed in the pathologic examination.

CASE

A black 20 year-old woman, presented at our service due to severe progressive headache and drowsiness. Physical and neurologic examination were normal. Neuroimaging showed a heterogeneous cystic mass in the posterior right temporal lobe, extending to the ventricular trigone (Fig 1A, B, C). A temporal craniotomy was performed, and the lesion was resected completely. The post-operative period was uneventful. Pathologic examination was consistent with cholesterol granuloma. There was no dislipidemia nor familial hypercholesterolemia hystory. At 3-month follow-up, the patient resumed a normal life, with no complaints. The post-operative image shows no recurrence (Fig 1D).

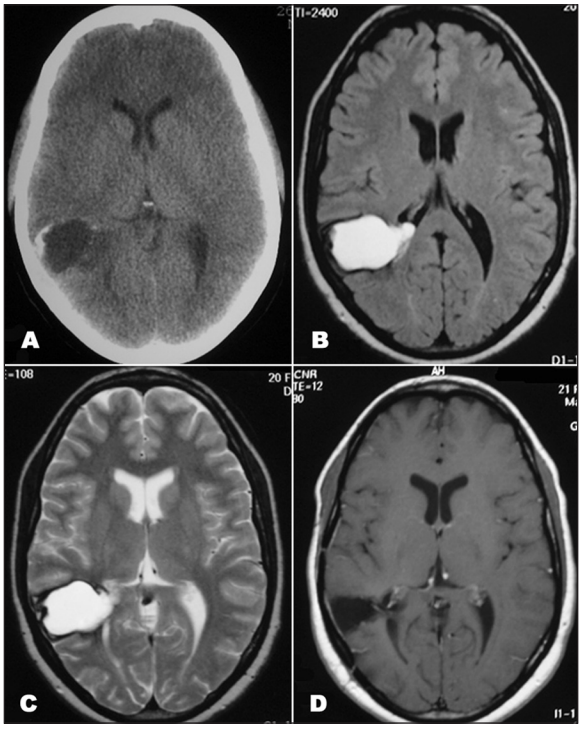

Fig 1. (A) Axial CT Scan showing hypodense lesion in temporal lobe, with calcification. (B) Axial T1 MR showing temporal mass hyperintense to the cortex (lipid). (C) Axial T2 MR. (D) 5-month follow-up post-operative axial T1 MR.

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DISCUSSION

Intracranial cholesterol granulomata are rare lesions, and are thought to occur as a foreign body reaction against cholesterol crystals[1-4]. Cholesterol granulomata occur in about 1 per 2–3 million population each year[5]. In the region of mastoid air cells, the mucosal swelling blockage of the pneumatic pathways to apical air cell system, leading to hypoxia and further tissue and blood cells necrosis. Trapped gas resorption results in a vacuum that triggers bleeding, and cholesterol crystals forms through anaerobic breakdown of blood products[3]. Another theory, the exposed marrow hypothesis, was postulated to explain the cholesterol granuloma formation [3].

The petrous apex is the most intracranial site frequently involved by cholesterol granulomata[2,5-7], followed by orbital bones[4,8,9]. Further reports indicate that cholesterol granulomas account for 60% of petrous apex lesions [10].There are cases of xanthomas in the third ventricle, including associated with colloid cyst[11].

One case report was found concerned intracerebral localization of cholesterol granuloma[1], in a patient with familial hypercolesterolemia and high serum lipid levels, who presented with an asymptomatic cholesterol granuloma of the brain. Intracranial cerebral cholesterol granulomata have not been associated with genetic hypercholesterolemia[5,6], with only one previous case linked to homozygous FH[12]. In the present case, the patient was not dislipidemic, neither history of familial hypercolesterolemia was present. There was no history of pregress neurologic illness, such as cerebral hemorhage or traumatic brain injury, wich could explain the presence of blood degradation products in the cerebral parenchyma. Thus, no risk factor could be assesed.

Imaging of the lesions with computed tomography and magnetic resonance imaging can help differentiate cholesterol granulomas from other lesions on the basis of a characteristic appearance. In general, the lesion is hyperintense in both T1 and T2-weight images, because of presence of lipid. A dark signal rim in T2, suggestive of hemosiderin, also could be seen.

The treatment of cholesterol granuloma is the surgical excision, with very low incidence of recurrence in cases with complete removal [4].

REFERENCES

1. Francis GA, Johnson RL, Findlay JM, Wang J, Hegele RA. Cerebral cholesterol granuloma in homozygous familial hypercholesterolemia. CMAJ 2005;172:495-497
2. Verret DJ, Samy RN. Bilateral cholesterol granulomas.Otol Neurotol 2005;26:1041-1044.
3. Jackler RK, Cho M. A new theory to explain the genesis of petrous apex cholesterol granuloma. Otol Neurotol 2003;24:96-106.
4. Arat YO, Chaudhry IA, Boniuk M. Orbitofrontal cholesterol granuloma: distinct diagnostic features and management. Ophthal Plast Reconstr Surg 2003;19:382-387.
5. Lo WW, Solti-Bohman LG, Brackmann DE, Gruskin P. Cholesterol granuloma of the petrous apex: CT diagnosis. Radiology 1984;153:705-711.
6. Gherini SG, Brackmann DE, Lo WW, Solti-Bohman LG. Cholesterol granuloma of the petrous apex. Laryngoscope 1985;95:659-664.
7. Terao T, Onoue H, Hashimoto T, Ishibashi T, Kogure T, Abe T. Cholesterol granuloma in the petrous apex: case report and review. Acta Neurochir (Wien) 2001;143:947-952.
8. McNab AA, Wright JE. Orbitofrontal cholesterol granuloma. Ophthalmology 1990;97:28-32.
9. Selva D, Chen C. Orbitofrontal cholesterol granuloma: percutaneous endoscopic-assisted curettage. Orbit 2004;23:49-52.
10. Muckle RP, De la Cruz A, Lo WM. Petrous apex lesions. Am J Otol 1998; 19:219-225.
11. Shuangshoti S, Phonprasert C, Suwanwela N, Netsky MG. Combined neuroepithelial (colloid) cyst and xanthogranuloma (xanthoma) in the third ventricle. Neurology 1975;25:547-552.
12. Yamada H, Kurata H, Nomura K, Utsunomiya K, Shimizu M, Isogai Y. Adult xanthogranulomatous intracranial lesion involving familial hypercholesterolemia. Jpn J Med 1989;28:757-761.