

Leptomeningeal Sugar Coating: Leptomeningeal Metastases

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Abstract

Sugar coating is an imagery metaphor for lepto-meningeal carcinomatosis. This carcinomatosis is related to the meningeal dissemination of a solid tumor lesion or blood disease. Call signs are nonspecific. We report a case of lepto-meningeal carcinomatosis in a 51-year-old patient who was followed for treated breast cancer. We discuss the description of this semiological sign, its pathophysiology and the characteristic signs in imaging of lepto-meningeal carcinomatosis.

Comment

Sugar coating, coating or icing or zuckerguss in German (Figure 1) are metaphors that are used to describe leptomeningeal carcinomatosis. Leptomeningeal carcinomatosis can appear in

tumors of the central nervous system. However, it is often seen in breast carcinoma, lung carcinoma, melanoma, lymphoma and leukemia [1].

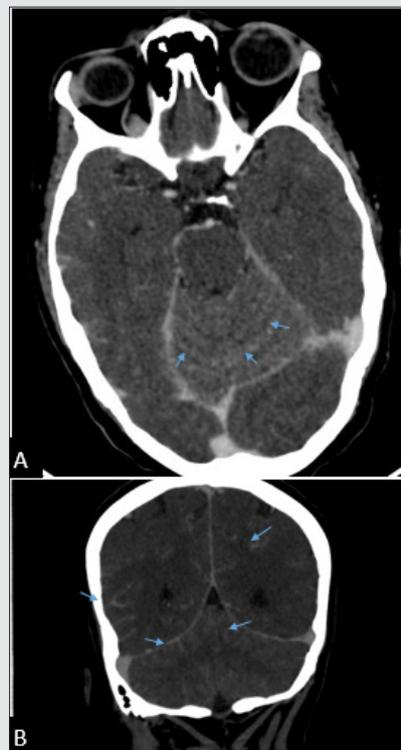


Figure 1: CT images in axial (A) and coronal (B) injected sections showing a diffuse homogeneous regular leptomeningeal enhancement of the cortical grooves in addition and under tentorials (arrows) reminiscent of the sign of sugar coating.

Several theories come to explain the meningeal spread of tumor cells. Contiguous extension from a bone metastasis or from a cortical, para-ventricular cerebral metastasis is one of the possibilities [2]. Other modes of extension are namely hematogenous spread to the choroid plexus and then to the leptomeninges and metastases via the Batson para-spinal venous plexus [3]. Meningeal involvement can also occur directly from the meningeal arteries [1]. It can also occur by seeding during surgical resection of a primary or secondary brain tumor process [1]. Lepto-meningeal infiltration is manifested by signs of meningismus, impaired consciousness, damage to the cranial nerves or by signs of obstruction of the cerebrospinal fluid (CSF), which can be multi-symptomatic [1]. Ischemic brain or spinal cord injury can be caused by irritative vascular injury

[1]. The CSF study is the gold standard for the diagnosis of leptomeningeal carcinomatosis [1]. Currently, with the development of craniospinal imaging means, especially MRI with Gadolinium, the diagnosis has become much earlier and more and more specific and sensitive [1]. CT is less sensitive than MRI, showing abnormalities only in 25% to 50% [1]. They can obviously show the sugar coating which corresponds to an intense regular or nodular lepto-meningeal enhancement of the cortical furrows or of the base cisterns based on dural insertion and presenting the classic sign of the comet tail (Figure 2), Abnormal ependymal enhancement or enhanced intraventricular masses, obstructive or non-obstructive hydrocephalus or infiltration of cranial nerves [2,3].



Figure 2: Photo of a German cake with a sugar coating (arrow).

In terms of imaging, the differential diagnosis can arise with the other meningeal processes leading the meningioma, tuberculous meningitis, fungal meningitis or neurosarcoidosis [1, 3]. The therapeutic attitude is a subject of controversy, due to the aggressiveness of the treatment in the face of a poor prognosis with an overall survival of a few months [1].

Conflicts of Interest

The authors declare that there is no conflict of interest.

Contributions from the Authors

Hind Sahli - Design of the work, Design of the work, Data acquisition, Data analysis, writing of the work, Critical review of the work for significant intellectual content, Final approval of the version to be published, Accept to be responsible for all aspects of the work ensuring that issues relating to the accuracy or integrity of any part of the work are properly investigated and resolved.

Sanae Amalik - Design of the work, Design of the work, Data acquisition, Critical review of the work for significant intellectual content, Final approval of the version to be published, Agreeing to be responsible for all aspects of the work ensuring that issues relating to the accuracy or integrity of any part of the work are properly investigated and resolved.

Asaad El Bakkari - Data Acquisition, Drafting of the work, Final approval of the version to be published, Agreeing to be responsible for all aspects of the work ensuring that matters relating to the accuracy or integrity of any part of the work is properly investigated and resolved.

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Rachida Latib - Design of the work, Design of the work, Critical review of the work for significant intellectual content, Final approval of the version to be published, Agree to be responsible for all aspects of the work ensuring that issues relating to the accuracy or integrity of any part of the work is properly investigated and resolved.

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