

## Letter to the Editor

## Dracula teeth-like image on MRI of a patient with non alcoholic Wernicke encephalopathy



Dear Editor,

We report a case of non alcoholic Wernicke encephalopathy (WE) with atypical neuroimaging.

A 72-year-old man presented to the emergency department with a 1-month history of gait impairment. He was affected by non Hodgkin lymphoma treated with rituximab fludarabine and ifosfamide. The last cycle was administered three months before with a good outcome.

The neurologic examination revealed temporal disorientation, dysarthria, vertical gaze palsy, head tremor and severe gait ataxia.

Magnetic resonance Imaging (MRI) showed hyperintensities of superior cerebellar peduncles (SCP) on T2 weighted images (Fig. 1A) and diffusion-weighted images (DWI) (Fig. 1B). Testing for cerebrospinal fluid was normal. In particular searching for 14-3-3 protein and for antibodies associated with paraneoplastic encephalopathies was negative.

Considering anamnestic and clinical data a diagnosis of Wernicke encephalopathy (WE) was hypothesized and treatment with

endovenous thiamine was started. The clinical picture didn't show any improvement and the patient died 20 days later.

Autopsy confirmed the diagnosis of Wernicke disease and a section at the SCP showed microhemorrhages (Fig. 1C) and diffuse edema (Fig. 1D).

Risk factors for WE are chronic alcohol consumption, malnutrition, vomiting, malabsorption and thiamine inactivation by certain chemotherapeutic drugs such as ifosfamide, erbulozole and 5-fluorouracil [1].

The clinical picture is characterized by ophthalmoplegia, gait ataxia and confusion/memory loss.

Cytotoxic edema and vasogenic edema are the most typical MRI findings of WE, presenting as bilateral symmetrical hyperintense signals on T2 and DWI. The most frequently affected regions are the medial thalamus, the periventricular region of the third ventricle, periaqueductal area, mammillary bodies and midbrain tectum. Atypical regions such as caudate nucleus, dentate nuclei, cortical areas and cerebellum

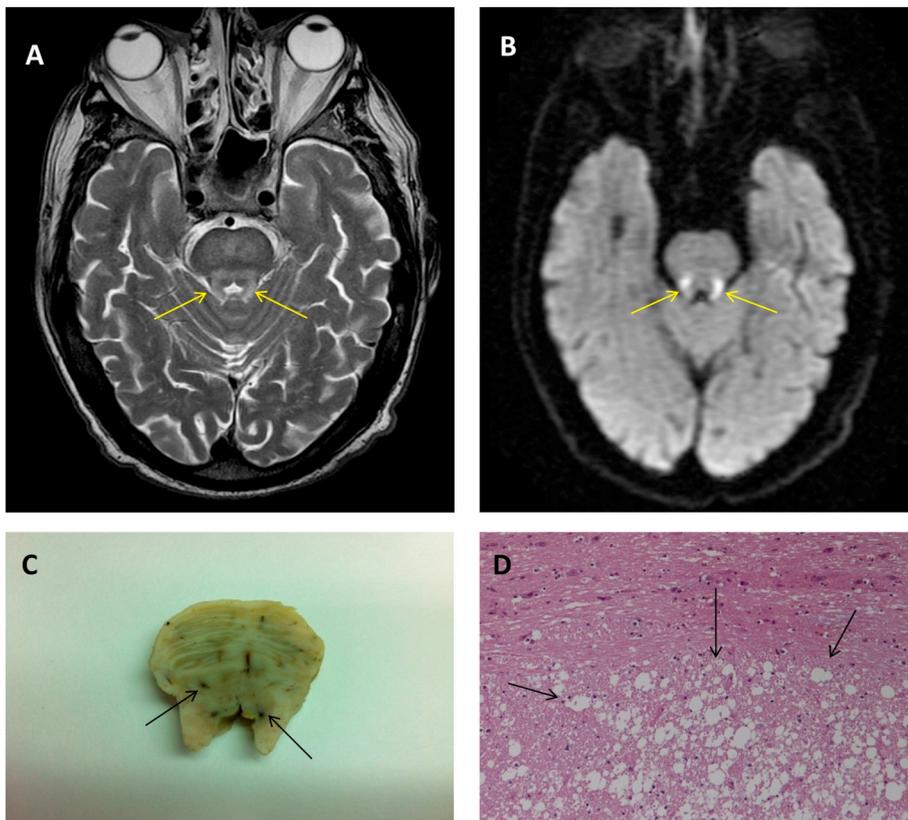


Fig. 1. Brain magnetic resonance imaging axial sections and neuropathology sections.

A. Bilateral hyperintensities (arrows) of superior cerebellar peduncles on T2 Weighted Images. B. The same section on Diffusion Weighted Images showing a Dracula teeth-like image. C. Horizontal section at the level of superior cerebellar peduncles showing focal microhemorrhages (arrows). D. Hematoxylin and eosin stained section through the superior cerebellar peduncles revealed diffuse edema (arrows).

are more frequently involved in non alcoholic WE [2].

Cancer-related WE can be due to one of four broad pathophysiological mechanisms: 1) decrease availability of thiamine (eg, due to anorexia, vomiting, malabsorption, malnutrition); 2) accelerated use of thiamine by rapidly growing tumors (eg, haematological malignancies) or in hypermetabolic states (critical illness, infection, steroid use); 3) impaired function of thiamine-dependent enzymes due to cofactor deficiency (hypomagnesaemia) or inactivation by breakdown products of chemotherapy; 4) increased loss by the kidneys (eg, due to diabetes or renal disease) [1].

WE complicating lymphoma therapy has been previously reported [3] but to our knowledge no patient with WE and MRI bilateral hyperintensities of SCP has been described in literature. In our case the neuropathological findings confirmed the presence of edema as the main underlying pathological process of WE [4].

The Dracula sign is suggested here to designate the MRI pattern resembling Dracula teeth.

#### Conflict of interest

All authors report no disclosures.

#### References

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