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SIGNS IN RADIOLOGY

OPTIC TRACT EDEMA SIGN AND CRANIOPHARYNGIOMAS

W. Siemons[1], G. Wilms[1], T. Theys[2]

Two patients with craniopharyngioma presenting with the "optic tract edema sign" are described. This sign is seen in a majority of craniopharyngiomas and can be of help in the differentiation with other suprasellar masses such as pituitary adenomas, meningiomas, germinomas and lymphomas. Nevertheless it has to be emphasized that the sign is not absolute and can be seen now and then in these other tumors.

Key-word: Craniopharyngioma.

The differential diagnosis of suprasellar masses is very broad, especially if the lesion is solid and homogeneously enhancing. The "optic tract edema" sign was described earlier as a relatively typical sign pointing to a craniopharyngioma. We wish to report 2 patients with a craniopharynioma presenting with the "optic tract edema sign" in order to illustrate this sign.

Case reports

Case 1

A 34-year-old woman presents with symptoms of hypogonadotropic infertility. There were no visual field defects. MRI (Fig. 1) showed a mainly cystic suprasellar mass, with definite edema of the optic tract. Pathologic examination revealed a craniopharyngioma of the adamantinomatous subtype.

Case 2

A 13-year-old girl was admitted with growth retardation. There were no visual complaints. MRI (Fig. 2) showed a heterogeneous mixed cystic and solid suprasellar mass, with again edema of the optic tract. Partial neurosurgical resection was performed. Pathologic examination here also revealed a craniopharyngioma of the adamantinomatous subtype.

Discussion

Several types of tumors can be found in the suprasellar region. Tumors growing from the base of the skull, such as tuberculum sellae meningiomas, the pituitary gland such as macro-adenomas or the hypthalamohypophyseal axis such as craniopharyngiomas are amenable to compression of the optic pathway (1). In 1998, Nagahata et al. (1) were the first to describe edema of the optic tract in suprasel-

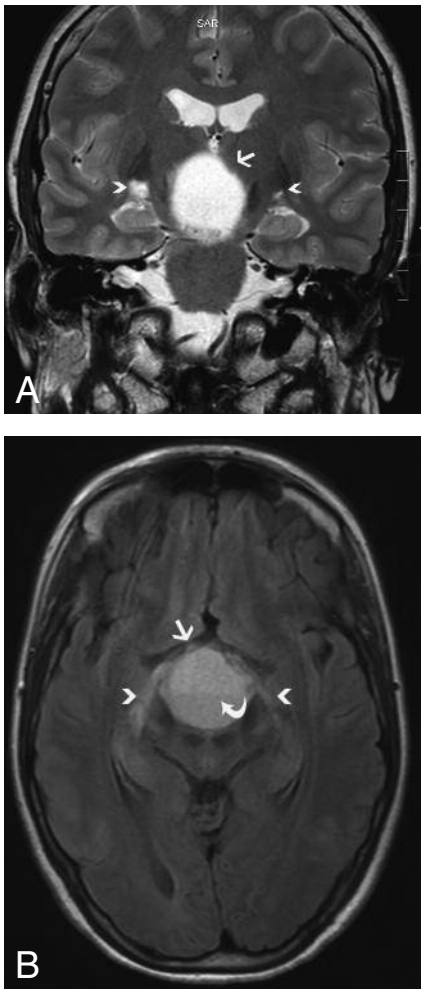

Fig. 1. — Patient 1. A. Coronal T2-weighted image (TR: 3000 ms, TE: 80 ms). Note the mainly cystic suprasellar mass (arrow). There is definite edema of both optic tracts (arrowheads). B. Axial FLAIR image (TR: 9000 ms, TE: 114 ms, TI: 2500 ms). Notice the suprasellar mass (arrows), with a discrete fluid-fluid level (curved arrow). There is edema of both optic tracts (arrowheads).

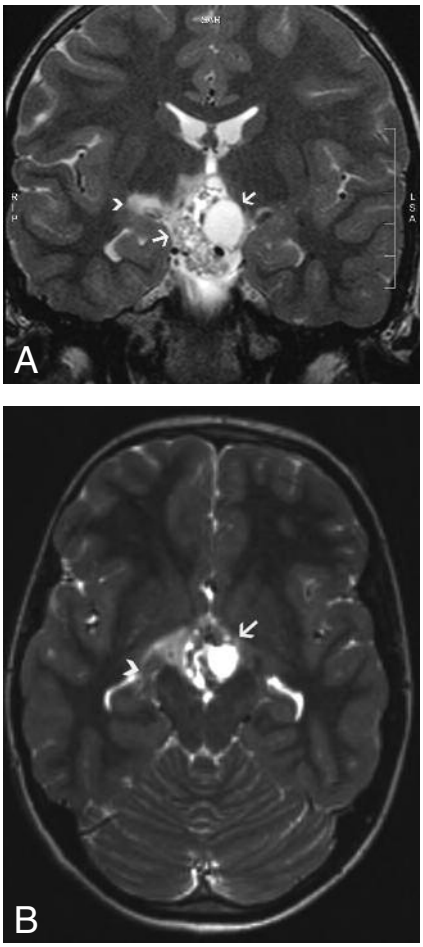

Fig. 2. — Patient 2. A. Coronal T2 weighted image (TR: 6110 ms, TE: 91). Notice the heterogeneous mixed cystic and solid suprasellar mass (arrows). There is edema of the right optic tract (arrowhead). B. Axial T2-weighted image (TR: 7240 ms, TE: 122 ms). Notice the suprasellar mass (arrow). There is edema of both optic tracts (arrowhead).

From: 1. Department of Radiology, 2. Department of Neurosurgery, UZ-Gasthuisberg, Leuven, Leuven, Belgium.
Address for correspondence: Dr W. Siemons, Department of Radiology, University Hospitals Leuven, Herestraat 49, 3000 Leuven, Belgium.

lar tumors. In their series this type of edema was seen in the majority (5/8) of craniopharyngiomas and not in macro-adenomas or meningiomas and therefore the authors concluded that the sign was not constant but rather specific for craniopharyngioma. It is noteworthy that not all patients with optic tract edema in this series presented with visual disturbances.

The mechanism of edema-like changes was speculated to be a regional inflammation due to microscopic leakage of the cyst contents, which would the cause a chemical meningitis and evoke adjacent edema.

In 2003 Saeki et al. (2) described 50 patients with pituitary region tumors touching or compressing the optic pathway. They found edema-like changes along the optic tract in 8 out of 11 craniopharyngiomas, but also in 4 of 25 pituitary adenomas, in 1 germ cell tumor and 1 malignant lymphoma. They stated that edema-like changes in association with pituitary region tumors were related with distension of normally present large Virchow-Robin spaces adjacent to the optic tract. Because Virchow-Robin spaces are speculated to be a drainage route of interstitial fluid into the subarachnoid space, their distension may be related to the fluid retention in and along the Virchow-Robin spaces, the outlet of which into the subpial and/or subarachnoid space(s) is blocked by pituitary region tumors.

Conclusion

We illustrate two patients with craniopharyngiomas presenting on MR with the "optic tract edema sign".

We draw the attention to the fact that the phenomenon of optic tract edema can be commonly seen in association with craniopharyngiomas, but is a non specific finding.

References

1. Nagahata M., Hosoya T., Kayama T., Yamaguchi K.: Edema along the optic tract: a useful MR finding for the diagnosis of craniopharyngiomas. *AJNR Am J Neuroradiol*, 1998, 19: 1753-1757.
2. Saeki N., Uchino Y., Murai H., Kubota M., Isobe K., Uno T., Sunami K., Yamaura A.: MR imaging study of edema-like change along the optic tract in patients with pituitary region tumors. *AJNR Am J Neuroradiol*, 2003, 24: 336-342.