



Stereotactic radiotherapy of optic nerve sheath meningioma: Helsinki experience

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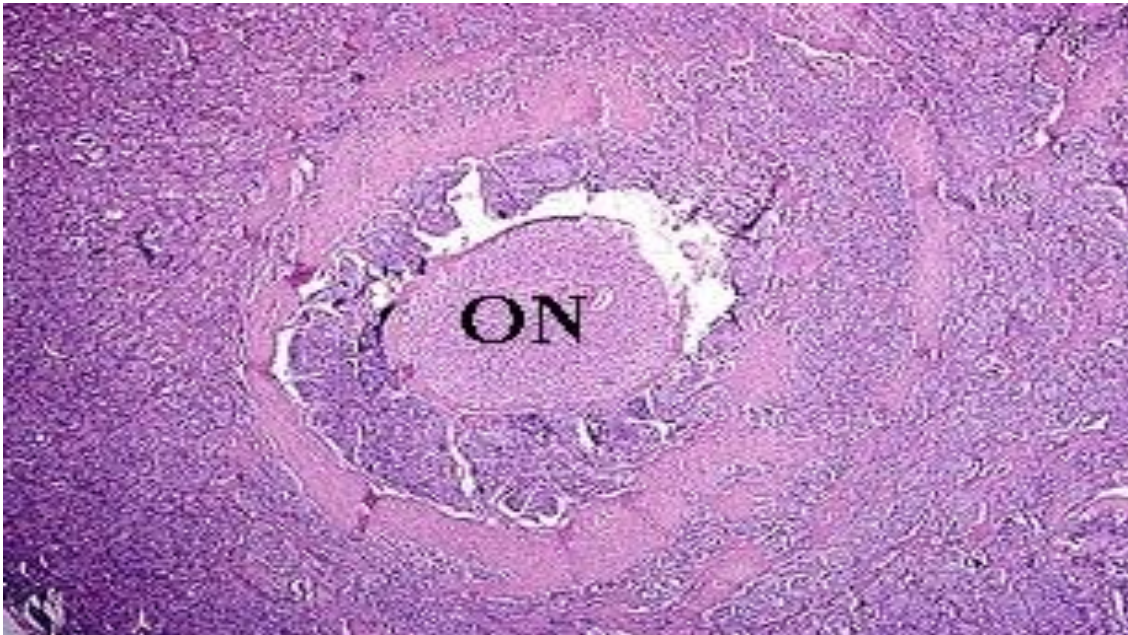
No conflict of interest

About meningiomas

- Meningiomas originate from meningotheelial cells in the arachnoid
- They form masses that in most cases are attached to the dura or choroid plexuses.
- In most cases they receive their blood supply from dural vessels
- Radical surgery is curative for benign (grade 1) meningiomas

Optic nerve sheath meningiomas

- Uncommon (< 1% of intracranial meningiomas)
- May affect any part of the optic nerve, even the chiasm



Optic nerve sheath meningioma

- Vasculature from vessels supplying the optic nerve
- Tumor often infiltrating into the periphery of the nerve.
- Intracanalicular location may lead to sudden vascular compromise and visual loss

Optic nerve sheath meningioma symptoms and findings

- Disturbed color vision and peripheral constriction of the visual field.
- Sudden loss of vision possible
- Usually painless exophthalmos
- Swollen or atrophic optic disc

Optic nerve sheath meningioma radiological findings

- Enlargement of the optic nerve
- Tram-track appearance on longitudinal sections of the optic nerve
- Peripheral enhancement on cross-section



Optic nerve sheath meningioma

Observation or treatment

Incidental or minor ophthalmologic findings.

- MRI at 6-12 mths

- neuro-ophthalmologic examination at 6-12 mths

Progressive visual field loss:

- Stereotactic radiotherapy

- Surgery?

Other??

Optic nerve sheath meningioma

Radiotherapy

- Preferably conformal fields or imrt
- Total dose of 45-54Gy (1,8Gy daily fractions)
- >90% preservation or improvement of vision
- Tumor control 90-100% (length of follow-up?)

Optic nerve sheath meningioma

Role of surgery

- Intracanalicular tumor and rapid visual deterioration-> Surgical decompression of the optic nerve either by derroofing of the canal or by endoscopic transthemoidal approach may be vision saving.
- Biopsy usually not needed
- Tumor resection-Risk of acute loss of vision

Rassi MS, Prasad S, Can A, Pravdenkova S, Almefty R, Al-Mefty O: Prognostic factors in the surgical treatment of intracanalicular primary optic nerve sheath meningiomas. J Neurosurg 2018

- 1998-2016: 8 patients: 7F, 1M. Total resection 4/8. Ophthalmologic results: Vision improved 4, stable 1, deteriorated:3.
- Conclusion: Tumor resection may be attempted if radiotherapy contraindicated.

Optic nerve sheath meningioma

Other treatment possibilities

- Isotope-treatment with lutetium 177-octreotate (amount of radiotoxicity?)
- Radiosurgery (=single shot radiotherapy)-with present techniques the dose required for tumor control exceeds the tolerance of the optic nerve
- Protons??/Neutrons ???
- Medical treatment- no compound available

Optic nerve sheath meningioma

Helsinki treatment scheme

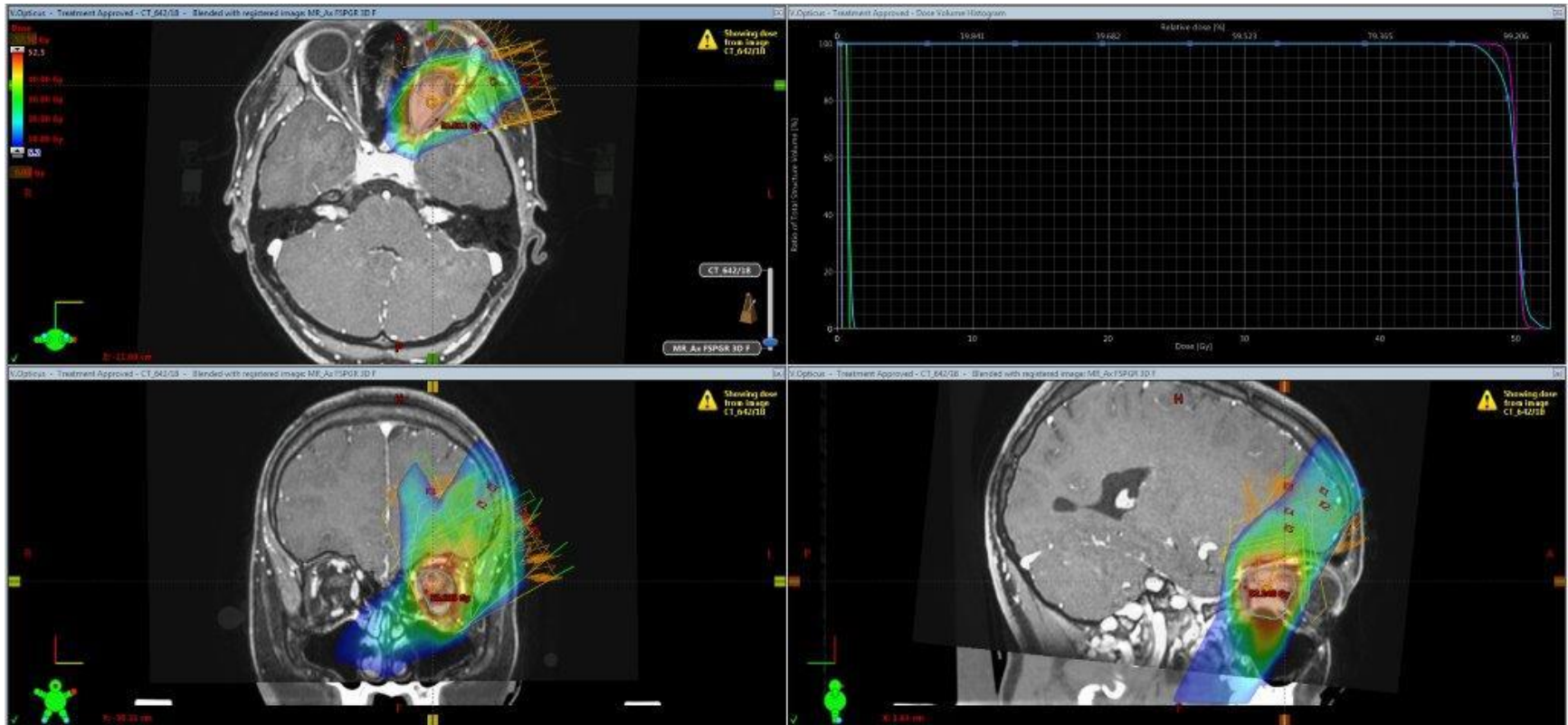
- Neuro-ophthalmologic examination
- Fractionated radiotherapy: 1,8 Gy/day
- Total dose 50,4 Gy
- Dexametasone 1,5-3mg x 2/day during treatment
- Neuro-ophthalmologic examination at 6-12 mths
- MRI at 12 mths

Patient example

- F, 17, NF2: Always poor vision on left eye: deterioration from 0,6 to 0,4 (uncertain shrinkage of Goldmann field)



Fractionated radiotherapy : 1,8 Gy/day, 28 days



Anna-Stina Jääskeläinen

Radiation oncologist



Magnus von Wright

1805-1868

