



Image in medicine

Differential diagnosis of meningioma and neuroma by registered 99mTc-Tektrotyd SPECT/MRI

Diagnóstico diferencial de meningioma y neuroma mediante SPECT/RM registrado con 99mTc-Tektrotyd

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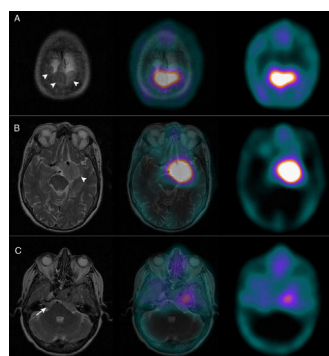


Fig. 1.

Neurofibromatosis type-2 comprises gene mutations in which affected individuals develop schwannomas, meningiomas and ependymomas, associated to morbidities and reduced life expectancy. It should be noted that both meningiomas and neuromas may coexist in the patient with neurofibromatosis. Meningiomas can grow anywhere in the skull but they are more frequently observed in supratentorial locations. We report a 73yo female with history of multiple meningiomas and acoustic neuromas that leads to vision and hearing loss of the left ear in the context of neurofibromatosis type-2 disease. In addition, in-vivo differential diagnosis of intracranial lesions is imperative, due to the high risk of biopsy hemorrhage and that anatomical findings by CT or MRI may be ambiguous. Moreover, it is known the frequent overexpression of SSTR2 in meningiomas. The individual characterization of each lesion provides fundamental information, which may reveal specific therapeutic targets. Limited experience have previously described the usefulness of somatostatin receptor (SSTR)-derived imaging for the characterization of meningiomas and neuromas in this clinical setting, since the first ones showed a high affinity for the tracer and the second ones showed no significant uptake ($p < 0.001$). A registered 99mTc-Tektrotyd SPECT/MRI were performed by fusion software (Fig. 1), allowing multiple meningiomas to be differentiated from one neuroma. In the axial slices of MRI, registered SPECT/MRI and SPECT at three levels (Fig. 1A–C), a high density of somatostatin receptors in multiple meningiomas (arrow-heads) were located at right parietal convexity of 14 and 34 mm, left parietal convexity of 26 mm and the left parasellar region of 49×38 mm approximately, which embraces the ipsilateral cavernous artery and extended to the sellar region and orbital apex. On the other hand, a right acoustic neuroma of 13 mm (arrow) without significant tracer uptake was observed. According to these results, treatment of meningiomas with injectable octreotide acetate was initiated. This report shows the versatility of SPECT/MRI registration software and highlights the value of recently developed 99mTc-labelled somatostatin analogues which increase availability and usability in this diagnostic challenge, allowing establishing an accurate characterization of the lesions that involves targeted therapeutic strategies.

Key points:

- Current software solutions allow an easily coregistration of SPECT/MRI images, improving the characterization of intracranial lesions.
- Somatostatin receptor (SSTR)-derived imaging is useful for the characterization of meningiomas and neuromas, that involves targeted therapeutic strategies, since the first ones showed a high affinity for the tracer and the second ones showed no significant uptake.

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