Commentary

Reports about diagnosis and treatment of metastatic spinal cord compression are relatively rare in the literature; even it represents a significant problem in the daily neurosurgical procedures. State-of-the-art imaging of spinal tumors is therefore underscored in the literature.[1] The authors in this issue[2] present a case of spinal compression as first presentation of a metastasis of a previously unknown thyroid carcinoma that is in the line with previous publication in the literature.[3] From the personal as well as the literature experience, it is known that intradural mass lesions are difficult to diagnose[4] and to operate.[5-7]

The case of Khan *et al*.[2] raises the question about the appropriate diagnostic scenario and highlights the importance of thorough preoperative work-up for metastatic spine tumors. MR imaging alone is nowadays - in most of the cases - not sufficient. It has a lack of precise tumor diagnosis in identification of the neurobiological active tumor compartments.[1] Molecular imaging is therefore more and more a diagnostic option in detection of metastasis, also in the spine. Such detection of spinal metastasis by molecular imaging is a relatively new, but clinically important technique. Cases such as recently reported in the literature,[3] where even the different molecular imaging modalities can be directly compared, are important to gain more experience and insights in the different modalities for spinal molecular imaging and to perhaps find special indications for the one or the other method.

Recent advances in microsurgery of spine[5] have substantially improved the quality of life of the patients, but local recurrence remains relatively common and the therapeutic options of recurrence are often limited to radiation therapy. Therefore a good preoperative planning of the surgery is important and needs preoperative and perhaps intraoperative molecular imaging approaches to be capable to identify the exact extent of metastatic spread.[1] Such new diagnostic approaches open the door to visualize interactions between metastatic cancer cells and osteoclasts[8] that is important to control the surgical margins. Such molecular imaging takes advantage of the traditional diagnostic imaging techniques and determines the expression of indicative molecular targets at different stages of cancer progression.

Besides these important interactions between pre- and intraoperative (molecular) imaging and subsequent surgery, the molecular approach helps better diagnose preoperatively histological types[1] and opens the door to all non-surgical treatment modalities of spinal metastasis. Additionally, molecular imaging may help to detect progression or recurrence of metastatic disease after surgical treatment. In cases of nonsurgical treatments such as chemo-, hormone- or radiotherapy, it may be better assess by biological efficiency than conventional imaging modalities coupled with blood tumor markers. Spinal molecular imaging has therefore shown to change the patient management. However, the economic evaluations conclude that spinal molecular imaging as an add-on imaging device is cost-effective in the preoperative staging of metastatic disease but not in primary cancers.

In conclusion, the present[2] as well as our case[3] helps to illuminate the importance of (molecular) imaging of spinal metastasis. In this context, molecular imaging is extremely useful to decide about the aggressiveness of the surgical management. Additionally, molecular imaging of the spine provides a unique possibility to

correlate topography and specific metabolic activity, but it requires additional clinical and experimental experience and research to find new indications for primary or secondary spinal tumors.

Nora Sandu, Bernhard Schaller

University of Southampton, United Kingdom

Address for correspondence:
Prof. Bernhard Schaller,
University of Southampton, United Kingdom.
E-mail: bernhardjschaller@gmail.com

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