

Metastatic skeletal involvement

Metastatic bone damage is the most common malignancy treated by orthopaedic surgeons. It is estimated that *50-80% of cancer patients have bone metastases at the time of death*. Proper orthopaedic care is crucial and can significantly reduce pain and maintain self-sufficiency for many patients.

If a bone lesion is diagnosed in a patient with a previously diagnosed cancer, it is most likely metastasis. If patients older than 40 years without a previous oncological diagnosis are newly diagnosed with bone lesions with aggressive manifestation, it is often also a *'metastasis'* or *'multiple myeloma'*.

Examination procedure

- Taking anamnesis and physical examination, including breast or prostate examination;
- basic laboratory tests including serum protein electrophoresis, or prostate specific antigen;
- X-ray of the affected bone and the chest, scan the skeleton to detect any other injuries;
- CT of the chest, abdomen and pelvis.

Failure to follow the complete screening procedure before biopsy can have a significant impact on the quality of care. This simple approach leads in more than 85% of cases to the detection of a primary lesion in patients with metastatic skeletal involvement of unclear origin. A biopsy may be performed after the examination. In the case of a previous cancer, a biopsy must be performed to clarify the primary cause of the bone injury and to determine the exact relationship between the primary cancer and the suspected metastasis. The biopsy must be performed in the same way as for primary sarcoma, as in rare cases it may be *osteosarcoma*.

The most common origin of metastases

These are most often metastases originating from:

- *'breast and prostate'* followed by metastases,
- lungs,
- kidneys,
- thyroid gland,
- GIT.

The order is according to descending incidence.

However, in patients with metastases of unclear origin, the *'lungs or kidneys'* are to blame. There are several explanations for this phenomenon:

1. Primary lesions of patients with breast or prostate cancer are usually easier to detect in the early stages.
2. Breast and prostate cancer tend to metastasize to the bone in the late stages.
3. Lung or kidney cancers can escape detection for a relatively long time and tend to metastasize relatively early.

Images of lesions

The **X-ray** image is different. The manifestation is usually aggressive, suggestive of malignancy. The lesions may be lytic, blastic or mixed.

- *'plastic - breast cancer, prostate cancer, thyroid, oral cavity, neuroblastoma, medulloblastoma, carcinoma,*
- *'lytic - kidney cancer', adrenal glands, uterus, gastrointestinal tract,*
- *'mixed - lung cancer', ovaries, testes, cervix.*

Treatment

Treatment of metastatic disease is multimodal:

- *'cytotoxic treatment'* led by an oncologist;
- *'hormonal manipulation'* is especially suitable for patients with prostate or breast cancer;
- *radioactive iodine therapy* is effective in some patients with thyroid cancer;
- new findings suggest that bisphosphonates may play a role in preventing the development of new metastases and may slow the growth of existing metastases by slowing osteoclastic resorption;
- most metastases are sensitive to *radiotherapy*, with the exception of kidney cancer, which is radioresistant;
- *'Surgical treatment'* is required in case of treatment:
 - *threatening or current pathological fractures,*
 - *'lesions larger than 2.5 cm,'*
 - *'lesions that damaged more than 50% of the cortex,'*
 - *'avulcan fractures of the small trochanter'.*

Mirels has developed a scoring system that assesses the risk of a pathological fracture, based on the location, size and nature of the lesion, as well as pain.

-	'Modality / Score'	1	2	3	-	Location	Upper limb	Lower limb	Peritrochanterically	-	Pain	Mild	Medium	Restrictive	-	Size	<0.85 cm	0.85-1.7 cm	> 1.7 cm	-	Nature of the lesion	Blastic	Mixed	Lytic
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The treatment procedure does not have to follow exclusively the scoring systems and guidelines. It is advisable to proceed with each patient individually, keeping in mind two facts:

- internal prophylactic fixation of impending fractures is *'technically easier'* than fixation of an already established fracture,
- prophylactic fixation *'increases survival'*.

The prognosis of patients with pathological fractures is constantly improving. Nevertheless, patients with lung metastases often die within 6 months, but we can meet patients who survive for 5-6 years. This fact is a great challenge for the surgeon. Postoperative rehabilitation should be as short as possible, as the patient may not have much time left, and the procedure will be sufficiently durable if the patient lives to be several years. In general, the tumor should be removed before internal fixation. The resulting cavity can be filled with "methacrylate" to improve fixation. In most cases, the whole bone is fixed intramedullary. If the solution is not strong enough for full weight loading, a "prosthetic reconstruction" is offered. The lesion of the femoral neck can be solved by hemiatroplasty or total hip replacement. Arthroplastic components should be "" fixed with cement due to the radiotherapy being performed. Radiotherapy is performed in the entire range of the operating field 2-3 weeks after the operation, if the wound is healed.

Links

Source

- ws:Metastatické postižení skeletu

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References

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