

Complete Recalcification Following Arterial Embolization of Massive Osteolytic Bone Metastasis From NSCLC



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Images refer to a 55-year-old man with NSCLC widespread to bones and lymph nodes. Baseline computed tomography scan showed an 8 × 5 cm tumor mass in the left upper lobe associated with a massive infiltration of three vertebrae (C7-T1-T2) and relative rib (Fig. 1A). For the presence of uncontrolled thoracic pain, the patient was initially treated with external beam radiotherapy (EBRT: 30 Gy/10 fractions) and opioids, with partial symptoms control.

After multidisciplinary discussion, he was considered for bone metastases embolization.

In November 2009, we performed selective arteriography of the lesions afferent vessels to explore tumor neovascularization (Fig. 2A). More than one guide wire was used, as needed. Each had a 0.89 mm diameter, while they were 150 cm or 180 cm in length. N-2-butyl cyanoacrylate 0.3 mL was injected sandwiched with 2 + 2 mL of 5% glucose solution under fluoroscopic control inside the lesion's afferent vessels arising from the right supreme intercostal arteries and left ascending cervical arteries (Fig. 2B). Two days after, the patient underwent spinal surgery to stabilize the thoracic tract.

Later, he started a first-line platinum-based chemotherapy, up to 3 courses, and zoledronic acid 4 mg intravenously every 4 weeks, obtaining a partial response.

After 1 year of follow-up, the patient had no neurologic impairment of new onset and referred a complete pain control. A computed tomography scan showed an impressive recalcification of vertebral and rib bone metastasis (Fig. 1B). After 3 years, the clinical and imaging data of the spine were unchanged.

The presence of bone metastasis is frequently associated with poor prognosis and quality of life. Bone-

targeted treatment using bisphosphonate and tumor necrosis factor receptor superfamily member 11A (receptor activator of nuclear factor κ B) ligand inhibitors can reduce the risk of skeletal complications but has little impact on pain and survival. According to most treatment guidelines, patients presenting with bone fractures or large impending lesions in weight-bearing bones can be offered surgical stabilization.^{1,2} Moreover, minimally invasive techniques such as EBRT, stereotactic body radiation therapy, radiofrequency ablation, percutaneous cryoplasty, and cementoplasty can be effective in patients who are poor surgical candidates.³

The main purpose of embolization is to occlude tumor vascular supply leading to ischemia and, consequently, tissue necrosis, yet avoiding damage to adjacent normal tissue.⁴ Embolization can have immediate palliative effect with rapid reduction in pain up to 97% patients with different types of tumors and, in some cases, it can improve stability through recalcification of osteolytic bone metastases.⁵

In current clinical practice, embolization is considered when there is a single or few lesions accounting for

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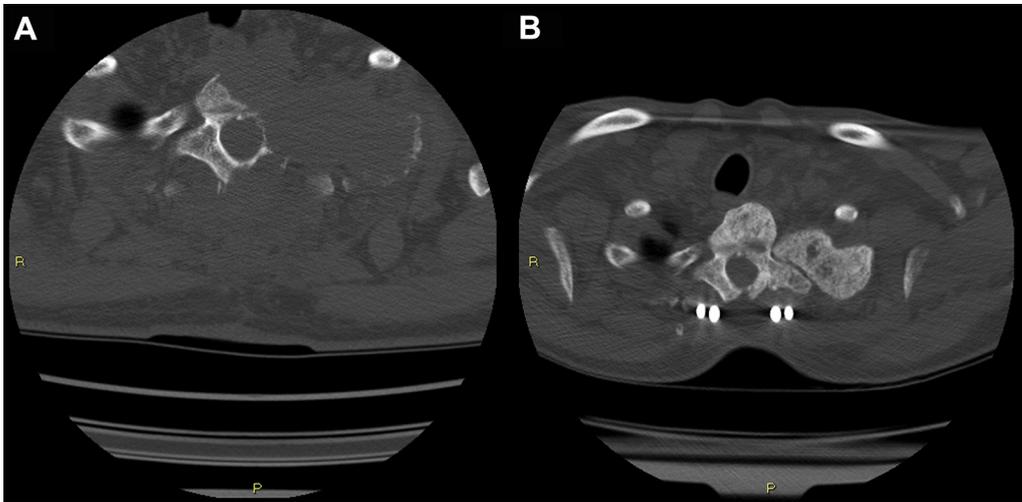


Figure 1. Computed tomography scan of spine showing a massive tumor infiltration of the T1 vertebra and first left rib before embolization (A), and after 1 year from embolization (B).

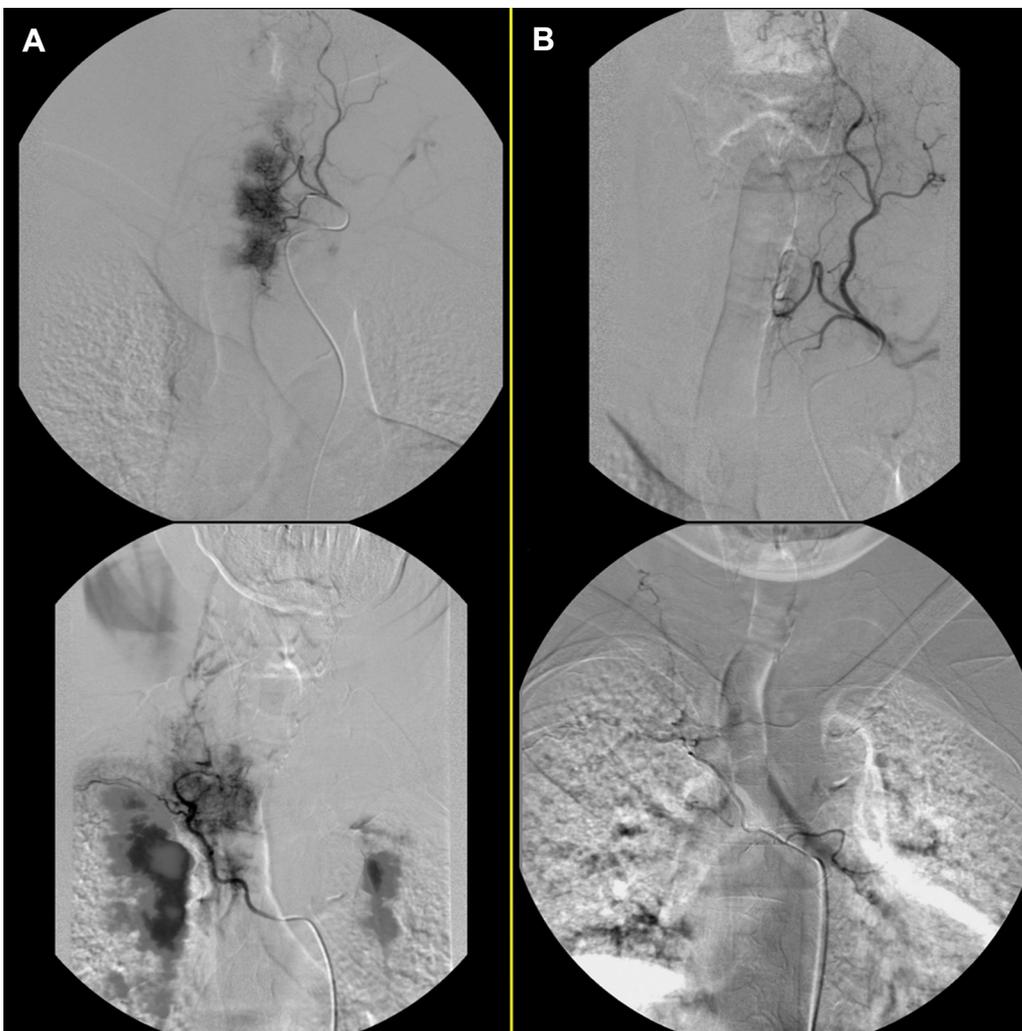


Figure 2. Conventional angiography showing high abnormal tumor vascularization before embolization (A), and its complete disappearance after (B).

the majority or all of the patient's symptoms after failure of conventional treatments, including EBRT, as in our case. Embolization has no limitations in terms of size of the treated lesion, but the presence of spinal arteries supplying the lesion is needed. Moreover, embolization can also be repeated. The most frequently treated sites are axial bones, whose involvement cause significant pain or disability.

Therefore, embolization of large bone metastasis refractory to conventional treatments might be considered in lung cancer patients as supplementary palliative treatment option.

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