



## Management Challenges of Pediatric Osteosarcoma with Pulmonary Metastases

Neda Ashayeri<sup>1</sup>, Ghasem Miri Aliabad<sup>1</sup>, Eghbali Aziz<sup>1</sup>

Pediatric hematologist and oncologist, Ali Asghar Childran Hospital, School of Medicine, Iran University of Medical Sciences, Tehran, Iran



### Abstract

**Introduction:** Osteosarcoma is the most common primary malignant bone tumor in children and adolescents. The lungs represent the most frequent site of metastasis, often determining prognosis. Early recognition and timely management are crucial for improving survival, but advanced metastatic disease remains a therapeutic challenge.

**Case Presentation:** We report a 5-year-old boy who initially presented with left arm pain and was misdiagnosed with a humeral fracture. Despite repeated parental concerns, evaluation was delayed until radiological investigations revealed an osteolytic lesion in the left humerus along with multiple pulmonary nodules (maximum size  $22 \times 15$  mm). Biopsy confirmed the diagnosis of osteosarcoma with lung metastases.

**Management:** Systemic chemotherapy was initiated, followed by surgical resection of the primary lesion with 90% necrosis on pathology. Chemotherapy was continued, but pulmonary nodules remained unchanged. The patient was referred for precision medicine; however, therapeutic options were limited due to drug unavailability. Subsequently, he developed seizures, and brain imaging revealed a large intracranial mass.

**Outcome:** Given the widespread disease and poor prognosis, the case was discussed in multiple multidisciplinary meetings. The family elected to pursue palliative care at home. Two months later, the patient presented with severe respiratory distress, was admitted to the ICU, and died within 24 hours.

**Conclusion:** Pulmonary metastases in pediatric osteosarcoma are associated with poor prognosis, particularly when multiple and unresectable. Complete surgical resection remains the most effective therapeutic approach when feasible. However, in advanced disease, treatment is limited, and palliative care plays an essential role in maintaining quality of life and supporting families.

**Keywords:** Osteosarcoma, Pediatric oncology, Pulmonary metastases, Case report, Palliative care

