Evaluation of pulmonary function in children with sarcoma after chest radiotherapy

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Introduction

Sarcoma is a malignant tumor originating from mesenchymal tissues.
Pulmonary metastasis is common in pediatric sarcomas.
Early and accurate pulmonary assessment is critical for treatment planning.

Importance of Pulmonary Evaluation

Lungs are the most frequent metastatic site in sarcoma.
Pulmonary involvement affects prognosis and treatment choices.
Detecting lung metastases guides surgery, chemotherapy, and radiotherapy.

Common Pediatric Sarcomas with Pulmonary Metastasis

Osteosarcoma
Ewing’s sarcoma
Rhabdomyosarcoma
Synovial sarcoma

Clinical Presentation

Often asymptomatic initially

Possible symptoms: cough, dyspnea, chest pain, hemoptysis (rare)

Importance of imaging for early detection

Imaging Modalities Overview

Chest X-ray (CXR)
Computed Tomography (CT) scan
Positron Emission Tomography (PET) scan
Magnetic Resonance Imaging (MRI) less common for lung

Other Diagnostic Tools

Pulmonary function tests (PFTs) for assessing lung capacity before surgery

Biopsy (rare, only if diagnosis is unclear)

Bronchoscopy (limited role)

Chest X-ray

First-line screening tool

Can detect larger pulmonary nodules

Limited sensitivity for small metastases

Chest CT Scan

Gold standard for pulmonary metastasis detection

High sensitivity and specificity for small nodules

Provides detailed anatomical information

Pulmonary Evaluation in Treatment Planning

Determines eligibility for metastasectomy

Guides chemotherapy intensity and duration

Monitors treatment response and recurrence

Summary and Conclusion

Pulmonary evaluation is essential in pediatric sarcoma management.

CT scan remains the cornerstone of lung assessment.

Multimodal imaging and clinical correlation improve diagnosis and prognosis.

Early detection of lung metastasis improves patient outcomes.

Pulmonary Function Testing in Pediatric Sarcoma Survivors

Pediatric sarcoma survivors often undergo chemotherapy, radiotherapy, or surgery.

These treatments can impact lung function.

Pulmonary function testing is essential for long-term follow-up.

Early detection of lung dysfunction.

Monitoring progression or improvement.

Guiding rehabilitation and activity recommendations.

Measures airflow and lung volumes (FEV1, FVC, etc.)

Non-invasive and widely used.

Detects obstructive and restrictive patterns.

Useful for detecting chemotherapy-induced lung toxicity

Requires cooperation — may be limited in very young children.

Should be repeated regularly during survivorship.

Body Box: Advanced Lung Volume Assessment

Measures static lung volumes (TLC, RV) and airway resistance
More sensitive than spirometry for restrictive lung disease
Helps differentiate between types of lung impairment

Important when spirometry results are borderline or unclear

Can assess small airway dysfunction

Valuable in patients with chest wall or lung surge

Clinical Significance in Pediatric Sarcoma Survivors

Lung damage may not show symptoms initially.
Combining spirometry and body box provides comprehensive assessment.
Supports early intervention and individualized care.

Routine PFTs are recommended in long-term follow-up protocols.
Collaboration between oncologists and pulmonologists is vital.
Encouraging physical activity based on lung function findings.


Thank
You