

The Distinguishing Characteristics of Suspicious Pulmonary Nodules in Patients with Osteosarcoma.

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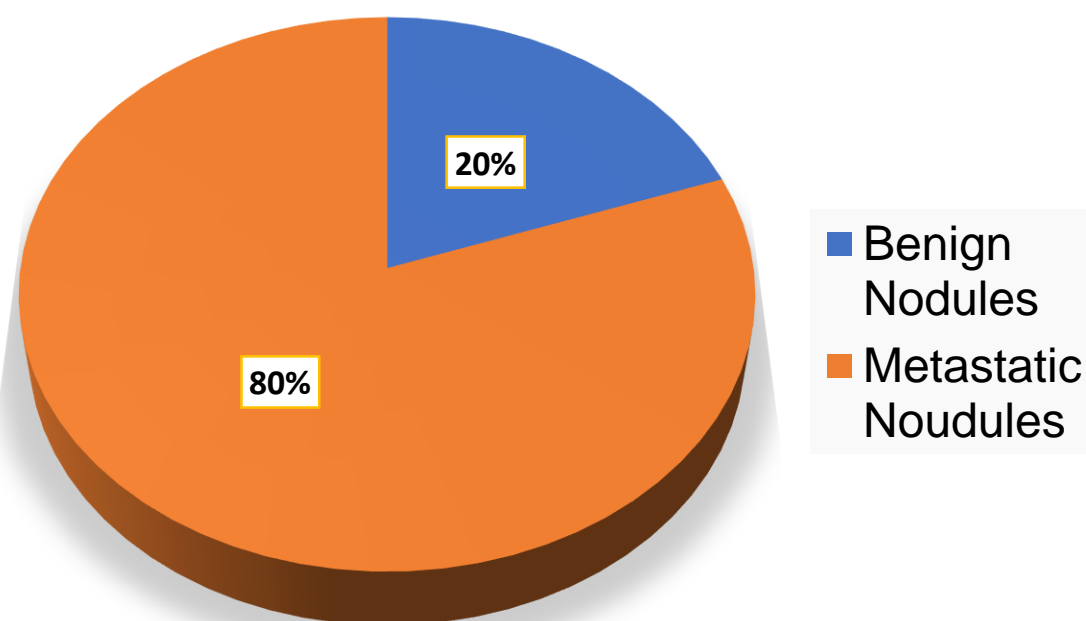
Purpose:

- To determine the CT characteristics of suspicious pulmonary nodules in patients with osteosarcoma in order to distinguish the benign from the malignant nodules.

Method:

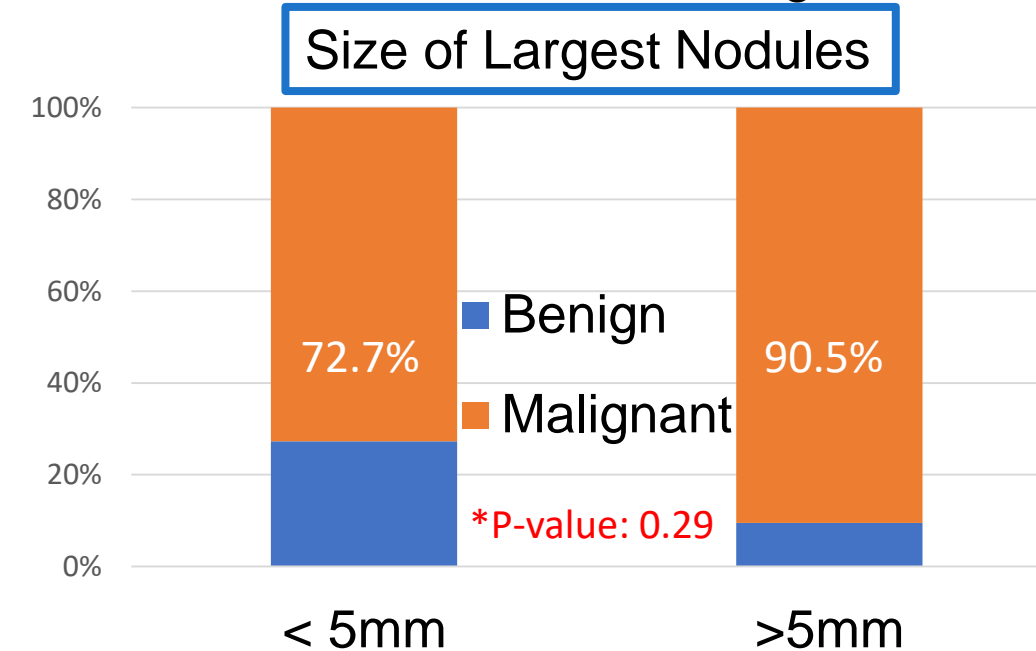
- The institutional review board approved this HIPAA compliant, retrospective study of 97 osteosarcoma patients treated on the pediatric services.
- (Mean age 15 years, range 5-46) who underwent chest CT followed by thoracotomy of pulmonary nodules from January 1994 to January 2020.
- A subspecialised chest radiologist independently, blindly reviewed the CT scans and defined the nodule characteristics (nodule size, laterality, number, location, change in size, density, margin appearance, calcification, present of new nodules)

Diagnosis of Nodules Based on Histology



Results:

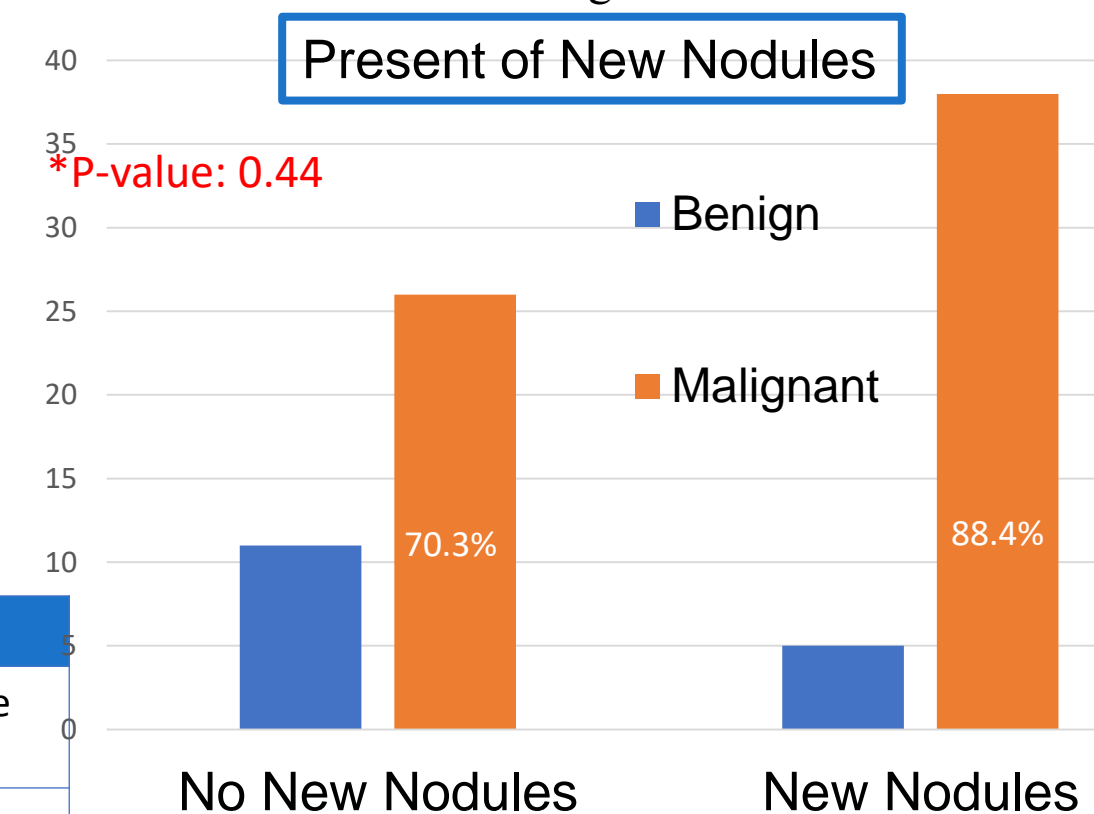
- Out of the 97 patients, 78 (80.4%) had at least one malignant nodule, and 19 (19.6%) had benign nodules by pathological review.
- 90.5% of patients with nodule size of 5mm or greater, had malignant nodule histology.
- 88.4% of patients with new nodules, on the subsequent CT scan, were found to have malignant nodule histology.
- 86.8.9% of patients who had changes in nodules size by more than 1mm on the consequent CT scan were found to have malignant nodules on histology.
- The number of nodules, location, the presence of calcification, and the percentage of necrosis of the primary tumor, were not associated with malignant histology.



Change of the size of the Nodule		N=83		
		No change	Changed in size	P-value
Histology	Benign Nodules	13 (28.9%)	5 (13.2%)	0.083
	Malignant Nodules	32 (71.1%)	20 (86.8%)	
Pearson Chi-Square: 3.0				0.083

Conclusion:

- During the first year after diagnosis, the presence of a pulmonary nodule of a size of 5 mm or greater and the appearance of new nodules are associated with an increased probability of malignant nodule histology in pediatric patients with osteosarcoma.
- The use of these characteristic features can help guide clinical practice by determining which patients should undergo surgical resection of lung nodules and which patients may be closely observed with continued radiologic studies.



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