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CHEST WALL TUMORS IN YOUNG PATIENTS: VARIABLES ASSOCIATED WITH SURVIVAL AND DEVELOPMENT OF SCOLIOSIS

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Aim of the Study: Pediatric chest wall tumors have varied histology and usually require extensive resection and reconstruction. We reviewed our institutional experience with these lesions to identify prognostic factors and variables associated with subsequent development of scoliosis and the need for corrective surgery.

Methods: Medical records were reviewed for all chest wall resections performed between 10/1986 and 09/2016 on patients ≤21 years of age. Data on demographics, disease characteristics, reconstruction type, long-term outcome, and scoliosis development were collected. Kaplan-Meier distributions were compared using the log-rank test. Variables correlated with scoliosis development or need for scoliosis surgery were analyzed using logistic regression.

Main Results: Median age at chest wall resection was 16 years (range: 2-21y); the male:female ratio was 1:1. Tumor types were Ewing sarcoma family tumors (54%), non-rhabdo sarcomas (20%), osteosarcoma (12%), rhabdomyosarcoma (6%), and others (8%). The chest wall lesion was the primary tumor site in 75% and a metastatic lesion in 25%. A median of 3 (range: 1-5) contiguous ribs were resected. Surgical reconstruction included Composite Marlex®-mesh-and-methylmethacrylate, Gore-Tex®, primary closure, or muscle flaps in 57%, 28%, 14% and 1% of procedures, respectively. All patients were extubated immediately; there were no operative mortalities. Overall 5-year survival was 61% (95%CI: 50-75%). Scoliosis developed in 20 (26%) patients, 5 of whom required spinal surgery. Variables associated with better overall survival were R0 resection (p=0.0002) and absence of metastatic disease (p=0.03), whether from a chest wall primary or as the chest wall lesion itself. Younger age at reconstruction (p=0.02) correlated with the need for scoliosis surgery.

Conclusion: Chest wall tumors in pediatric/adolescent patients are heterogeneous, and R0 resection is crucial for survival. Reducing the impact of metastatic disease will require improved systemic therapies. Younger patients have higher risk for scoliosis and eventual spinal correction, and therefore should undergo orthopedic surveillance.