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Electrocardiographic impacts of lung resection

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Abstract

Introduction: Electrocardiographic (ECG) changes accompanying lung resection have not been well investigated previously in a large controlled series of human adults. Thus, our current investigation was undertaken for a better understanding of the ECG changes associated with lung resection.

Materials and Methods: Medical records of 117 patients who underwent lung resection (segmentectomy, lobectomy, or pneumonectomy) were reviewed. Their clinical course and ECG's were compared during early, intermediate and late postoperative course (<1 month, 1 month to 1 year and >1 year post-op respectively).

Results: Patients in the acute postoperative phase had higher heart rate, increased maximum P-duration and P-dispersion, increased incidence of atrial arrhythmias and frequent ST-T changes. P-vector and QRS-vector were significantly affected after the lung resections; the correlation being most consistent between the anatomical displacements and the QRS-vector in the majority of patients. The frontal QRS vector displacements were statistically significant after pneumonectomies and demonstrated a characteristic temporal relationship after left pneumonectomy (a leftward deviation in the acute, normal or slight rightward deviation in the intermediate and a rightward deviation in the late postoperative course) [$p<0.0003$]. Precordial R-wave transition was often delayed in patients with the left lung resections where the findings simulated as an acute anteroseptal myocardial infarction; however the R/S transition often occurred early in the patients who underwent right sided lung resections [$p<0.0001$].

Conclusion: The understanding and recognition of the expected ECG findings after lung resection is imperative to avoid confusing these changes with other acute cardiopulmonary events which would prevent unnecessary further investigational work-up. These ECG changes are often dynamic and may bear a temporal relationship to the dynamic post-surgical changes in the thoracic anatomy.

Biography

Lovely Chhabra finished his medical school from T.N Medical College, Mumbai, India in 2007. After serving as a junior lecturer in a Govt. Medical school and a medical officer at Apollo Medical Center for two years in India, he then moved to USA to join his residency training at Saint Vincent Hospital (SVH), University of Massachusetts Medical School (UMMS) in 2009 and received his MD degree in 2012. He is currently working as a Chief Medical Resident at SVH, UMMS. During his years of the residency training, he worked on several cardiology research projects with his research mentor Dr. David H. Spodick who is a known legend in the field of Cardiovascular Medicine.

Chhabra has authored and co-authored two book chapters in Cardiovascular Medicine and over 20 peer-reviewed journal publications of which 16 have been published in several international peer-reviewed scientific journals. He has presented his scholarly work at over 20 state, national and international medical society meetings. He has also served on the reviewer boards of several international peer-reviewed medical journals including American journal of Cardiology, Indian Heart Journal, Hemodialysis International and Indian Pacing and Electrophysiology. His research interests include electrocardiography, pericardial diseases, interatrial conduction blocks and electrocardiographic changes associated with various pulmonary diseases.

He is starting his Cardiovascular diseases fellowship training at the University of Connecticut (Hartford Hospital) in July, 2013 and is planning to actively continue his research activities during his future career.