

海外招請講演

海外招請講演9 (IL-09)

2 Recent Advances in Pediatric Pulmonary Hypertens

座長:

土井 庄三郎 (東京医科歯科大学大学院 小児・周産期地域医療学)

Thu. Jul 7, 2016 5:20 PM - 5:50 PM 第D会場 (オーロラ イースト)

II-IL-09

5:20 PM - 5:50 PM

[II-IL-09]2 Recent Advances in Pediatric Pulmonary Hypertens

○Ian Adatia (University of Alberta, Cardiac Intensivist, Director, Pediatric Pulmonary Hypertension Service, Stollery Children's Hospital, Edmonton, Canada)

Listening to the voice of the heart: Acoustic diagnosis of pulmonary hypertension using automated speech and language recognition inspired algorithms

The diagnosis of pulmonary hypertension is delayed or missed during the early stages of the disease, when it is most treatable, because the clinical signs may be difficult to discern. There is, therefore, a pressing and unmet need to explore diagnostic screening methods that are cost effective, non-invasive and result in a timely diagnosis. We hypothesized that an automated speech- recognition-inspired classification algorithm could differentiate between the heart sounds in subjects with and without pulmonary hypertension and would outperform trained clinicians. Heart sounds, electrocardiograms, and pulmonary artery pressures were recorded simultaneously during catheterization of the pulmonary artery subjects undergoing right heart cardiac catheterization. Digitised heart sound recordings were used to train and test speech-recognition-inspired classification algorithms. We used mel-frequency cepstral coefficients to extract features from the heart sounds, and built Gaussian-mixture models to classify the features as pulmonary hypertension or non-pulmonary hypertension. Physicians, blinded to all clinical data and patient identity listened to heart sound recordings and attempted a diagnosis. We studied 164 subjects: 86 subjects with pulmonary hypertension (mean pulmonary artery pressure 40.0 ± 11.5 mmHg) and 78 without pulmonary hypertension (mean pulmonary artery pressure 16.5 ± 4.5 mmHg) (p