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## Non Invasive Imaging (Echocardiography, Nuclear, PET, MR and CT)

## OXIMETRY PARADOXUS: SUPERIORITY OVER PULSUS PARADOXUS IN THE CLINICAL DIAGNOSIS OF CARDIAC TAMPONADE

Poster Contributions

Poster Hall B1

Monday, March 16, 2015, 9:45 a.m.-10:30 a.m.

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**Background:** Cardiac tamponade is life threatening. Expedient diagnosis by echocardiography may not be immediately available. Early signs such as pulsus paradoxus can be difficult to obtain especially in an age where physical exam skills are less prioritized in education. We investigated the use of respirophasic variation in pulse oximetry waveform amplitudes as a simple, rapid adjunct tool in diagnosing tamponade.

**Methods:** A dual-center prospective cohort with suspected tamponade underwent pulse oximetry waveform analysis to determine the ratio of the peak amplitude during expiration to the peak amplitude during inspiration, which we termed "oximetry paradoxus". Tamponade was confirmed echocardiographically by blinded interpretation. Receiver operator characteristic (ROC) curves were used to assess diagnostic accuracy.

**Results:** In a total of 74 patients, 35 had tamponade by echocardiography. The ROC curve for oximetry paradoxus resulted in an area under the curve of 0.80 compared to 0.65 for pulsus paradoxus,  $P = 0.04$  (Figure). An oximetry paradoxus ratio of  $\geq 1.1$  had a sensitivity of 89% and specificity of 32%, while a pulsus paradoxus of  $\geq 10$  mmHg had a sensitivity of 59% and specificity of 37%.

**Conclusion:** We demonstrated that respirophasic variation in pulse oximetry waveform amplitudes is superior to pulsus paradoxus in the diagnosis of tamponade. An oximetry waveform amplitude ratio of  $\geq 1.1$  is significantly more sensitive than a pulsus paradoxus  $\geq 10$  mmHg. We term this "oximetry paradoxus".

