

A371 – MEASUREMENT OF CO BY FLOW PROBE, USCOM AND PAC IN CONSCIOUS SHEEP AT REST AND AFTER DOBUTAMINE

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Introduction:

PAC remains in clinical use as a measure of CO and haemodynamic trends, despite reports of inefficacy and patient risk. The flow probe(FP) accurately measures flow but is restricted to animal use by the necessity for surgical implantation. USCOM is a novel non-invasive 2 independent CW Doppler device for measurement of CO and haemodynamic change.

Method:

We compared USCOM and PAC Baxter intermittent thermodilution(PAC) with FP measurement of baseline CO and dobutamine induced changes in conscious sheep. FPs were implanted on the ascending thoracic aorta of 5 sheep, and after 2 weeks recovery, a PAC was inserted. In conscious sheep, transcutaneous trans-pulmonary USCOM signals were acquired and calibrated at baseline to the FP as USCOM calculates flow volumes from a human anthropometric algorithm. Simultaneous FP, USCOM and PAC signals were acquired at baseline and after dobutamine (5,10,20mg/h), and stored to spike 2 software while the Doppler data was recorded on the USCOM device.

Results:

Mean values for baseline measures by FP(n=862), USCOM(n=829) and PAC(n=741) were 4.26±0.67l/min, 4.51±0.90l/min and 5.34±1.26l/min respectively, increasing to 5.33±1.55l/min, 5.25±1.45l/min and 6.09±1.61l/min after dobutamine infusion. Mean error between paired FP and USCOM measures at baseline was 5.5%, and between FP and PAC

20.4%, and after dobutamine was 0.6% and 17.9%. For all measures FP and USCOM showed good correlation(r=0.745), while FP and PAC poorly correlated(r=0.323).

Conclusion:

USCOM may be a non-invasive alternative to PAC for measurement and monitoring of haemodynamics in animals and humans.

Table 1 :

	Sheep 1	Sheep 2	Sheep 3	Sheep 4	Sheep 5	Total
USCOM	0.925	0.764	0.850	0.528	0.659	0.745
PAC	0.114	0.722	0.818	0.517	0.207	0.323

Table 2 :

	CO Diff – Total	CO Diff – Base	CO Diff – Dob
FP vs USCOM	-2%	-5.5%	1%
USCOM vs PAC	-19%	-15%	-19%
FP vs PAC	-19%	-20%	-18%