

COMPARISON BETWEEN CONTRAST ECHOCARDIOGRAPHY AND THE 100% OXYGEN TECHNIQUE IN THE DETECTION OF SHUNT.

Jeffrey J. Pretto CRFS, Danny J. Brazzale CRFS and Peter D. Rochford CRFS.
Institute for Breathing & Sleep, Department of Respiratory and Sleep Medicine, Austin Hospital, Heidelberg, Victoria 3084.

Background: The 100% oxygen technique (OT) detects and quantifies right-to-left shunt. Contrast echocardiography (CE) is also used to detect shunting however does not provide a quantitative measurement. Several comparisons between CE and OT have yielded varying results in terms of sensitivity and specificity and but most of these studies have significant design flaws. We aimed to determine relationships between the findings from the two techniques in their measurement of shunt in an unselected clinical population.

Methods: Respiratory and cardiac databases at the Austin Hospital were retrospectively searched for patients undergoing both OT and CE shunt evaluations over an 8-year period. OT shunt was estimated from arterial blood gas analysis following 20 minutes of breathing 100% oxygen and compared with the normal range. CE was measured using agitated saline as the contrast medium and either early or late echogenicity indicated the presence of shunt.

Results: Of 529 OT shunt estimations performed over an 8-year period, 203 were found to have CEs performed within 6 weeks (86% within 7 days). Liver transplant workup was the most common indication for testing (55%). OT detected increased shunt in 59% of tests in comparison with only 18% detected by CE. Overall agreement between the two techniques was only 45% (positive results = 11%, negative = 34%). The table shows the distribution of findings ($p>0.9$).

		CE	
		+ve	-ve
OT	+ve	22	97
	-ve	15	69

Conclusions: There is no statistically significant agreement between the 2 techniques in detecting shunt. These data indicate that the techniques are measuring differing physiological phenomena.

Keywords: Shunt measurement, contrast echocardiography, 100% oxygen technique.

