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Title: Venous gas embolism: time course of residual pulmonary intravascular bubbles

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Keywords: CO2
carbon dioxide
nitrogen
pulmonary
air
animal
dog
Venous gas embolism

Issue Date: 1989

Abstract: The time course of pulmonary intravascular air emboli was studied in anesthetized dogs. In one series of experiments air was infused into the right atrium at 0.10 ml.kg⁻¹.min⁻¹ or 0.25 ml.kg⁻¹.min⁻¹ for 15 min or given as a bolus injection of 2 ml/kg at 2 ml/sec. In a second series of series of experiments venous air was infused into dogs (0.25 ml.kg⁻¹.min⁻¹, 15 min) ventilated with 100% oxygen for 0, 30, or 210 min before the embolization. After the air infusions the animals were allowed to recover, breathing 70% nitrogen:30% oxygen. At 10-min intervals during recovery, the nitrogen was replaced with nitrous oxide (N₂O) for 5 min to expand any residual pulmonary vascular bubbles. Subsequent changes in pulmonary artery pressure (Ppa) and end-tidal carbon dioxide (PETCO₂) concentrations, pulmonary vascular resistance (PVR) and carbon dioxide tensions (PaCO₂) as a result of the N₂O challenges indicated the presence of residual gas bubbles in the pulmonary arterial system. Residual times of the pulmonary bubbles were 24.5 +/- 12.3 min (0.10 ml.kg⁻¹.min⁻¹ air dose), 43 +/- 10.8 min (0.25 ml.kg⁻¹.min⁻¹ air dose), and 17.8 +/- 2.5 min (bolus). The latter two were significantly different from each other. With 100% oxygen breathing the residual times were 19 +/- 2.2 (0 min), 22 +/- 6.7 min (30 min), and 17 +/-

4.0 (210 min). These values were reduced significantly when compared to the dogs ventilated with 30% oxygen. (ABSTRACT TRUNCATED AT 250 WORDS)

Description: Undersea and Hyperbaric Medical Society, Inc. (<http://www.uhms.org>)

URI: [PMID: 2929052](https://pubmed.ncbi.nlm.nih.gov/2929052/)
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