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High-Grade Bubbles in Left and Right Heart in an Asymptomatic Diver at Rest After Surfacing

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Introduction: Most decompression procedures induce the formation of asymptomatic venous gas bubbles. They can be classified as “silent bubbles,” which are asymptomatic compared to paradoxical arterialization of venous gas emboli, which can lead to serious neurologic damage. The penetration of such gas bubbles into the arterial circulation is due to pulmonary barotrauma, intrapulmonary (I-P) passage after massive bubble formation (“chokes”), or intracardiac shunting. Venous gas bubbles can be monitored and graded with echocardiographic scanning.

Case: We believe this is the **first case to be reported of a recreational diver** who, after surfacing from a dive, **developed grade 5 (“white-out”) venous gas bubbles in the right heart** with evidence of I-P shunt at rest **without any symptoms of decompression sickness**. Grade 4 gas bubbles were found on the left side of the heart, indicating significant I-P shunting even at rest.

Conclusion: We observed venous bubbles crossing through the I-P shunt during post-dive recovery at rest in a diver who developed “white out” of venous bubbles. Previously, the maximum bubble grade 5 had been observed in experimental animals, but not in humans. Moreover, a significant bubble grade was found on the left side of the heart, indicating a need for further studies to investigate the mechanisms of post-dive changes in peripheral and central circulation.

References: [12 references](#)  open in new window

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