Carbon dioxide angiography in lower limbs: a prospective comparative study with selective iodinated contrast angiography

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This was a prospective comparison of the accuracy and image quality of carbon dioxide digital subtraction angiography (CO2 DSA) and iodinated contrast digital subtraction angiography (ICDSA) in evaluating lower extremity arteries and patient tolerance of the procedures. Selective DSA was performed in 14 Taiwanese patients who were diagnosed with peripheral artery occlusive disease (PAOD). Both contrast materials were administered through mechanical injectors. Post-processing of the image used pixel shifting. Images of vessels were divided into 22 anatomic segments and evaluated by two experienced radiologists. A four-point scale was used to classify diseased vessels. Two interpreters rated the CO2 DSA image against the ICDSA image on a three-point scale. Patient tolerance was assessed from verbal description. Cohen's kappa was used to determine interobserver agreement and descriptive statistics were used to summarize patient experience. Interobserver agreement ranged from fair to excellent, with most being good or excellent. Three patients (21.4%) could not tolerate the whole procedure and nine patients (64.3%) reported discomfort during the CO2 DSA procedure. CO2 DSA image quality was better for the thigh than the distal runoff and pelvic regions. Our results showed that selective CO2 DSA cannot replace ICDSA as a routine diagnostic tool for PAOD because it does not give images of comparative quality.

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