Abstract

Purpose: To retrospectively evaluate the depiction rate of feeding arteries in biopsy-proven clear cell renal cell carcinoma (CCRCC) on four-dimensional computed tomography angiography (4D-CTA) images.

Materials and methods: This study included 22 patients with 22 CCRCC and 30 feeding arteries treated with transcatheter renal artery embolization. The depiction rate of the feeding arteries on preprocedural 4D-CTA was evaluated. Images were acquired by 320-row multi-detector computed tomography (CT) 15–36 s after starting to inject a contrast agent (600 mg/kg iodine) intravenously into patients at 2.1 s intervals (11 phases). Two board-certified radiologists retrospectively assessed the feeder depiction rate in all 11 phases with reference to the procedural images as the gold standard. Discrepancies were resolved by consultation with a third radiologist.

Results: Among the feeders, 11 (36.7%) were segmental or lobar, and 19 (63.3%) were interlobar or arcuate arteries. The feeder depiction rate was the highest (25 [83.3%] of 30) in the 5^{th} phase (delay, 23.4 s) where the gap in contrast enhancement between the renal artery and cortex was the largest. This was followed by the 6^{th} (23 [76.7%] of 30), 4^{th} (22 [73.3%] of 30]), and 7^{th} (21 [70.0%] of 30) phases. The overall rate of depicting feeding arteries in the 11 phases of 4D-CTA was 28 (93.3%) of 30.

Conclusions: The depiction rate of CCRCC feeding arteries including lobar or smaller artery branches by 4D-CTA was favorable. The feeding arteries were optimally visualized during the phase with the largest contrast gap between the renal artery and cortex.