

**MR IMAGING OF THE LYMPHATIC SYSTEM-DISTRIBUTION
AND CONTRAST ENHANCEMENT OF GADODIAMIDE AFTER
INTRADERMAL INJECTION**

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ABSTRACT

We examined 24 lower extremities in 12 patients with lymphedema to evaluate the distribution and enhancement of gadodiamide after intradermal injection for MR imaging of lymphatic pathways in lymphedematous patients. The lymphedema was bilateral in 8, unilateral in 4, and 3 patients suffered from lymphedema in the genital region. 9 mL of gadodiamide and 1 mL of mepivacainhydrochloride 1% were divided into 5 portions and injected intradermally into the dorsal aspect of each foot. For MR imaging, a 3D spoiled gradient-echo sequence (Volumetric Interpolated Breathhold Examination, VIBE) was performed. We detected the beaded appearance of lymphatic vessels extending from the injection site in 22 lower extremities (92%). In 13 lower extremities (54%), lymphatic vessels of the upper leg could be visualized. A contrast enhancement was observed in 16 out of 24 inguinal lymph node groups (67%). After 15 minutes of contrast material application, concomitant venous enhancement was detected in all lower extremities (100%). In 15 lower extremities (63%), collateral vessels with dermal back-flow areas between lymphatic vessels were seen. Thus, intradermal injection of gadodiamide allows the visualization of lymphatic pathways in patients with lymphedema. In comparison to the venous system, lymphatic vessels show a tendency to have the highest contrast material uptake in the later acquisitions of 35, 45, and 55 minutes after intradermal injection of gadodiamide. Furthermore, 3D MIP reconstructions supported the identification of the lymphatic vessels and differentiation from veins due to the different angles of view.