A new strategy for imaging blood vessels in the legs using magnetic resonance imaging

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Imaging of the blood vessels in the legs using magnetic resonance (MR) presents a unique challenge in that high-resolution coverage over a field-of-view (FOV) > 100 cm is required. Currently, MR angiography (MRA) of the lower limbs is achieved by a three- or four-station technique that requires moving the patient and multiple injections of a contrast agent. It is, therefore, a relatively slow process typically requiring > 5 min. In this project, the suitability of a novel real-time interactive large FOV imaging technique is investigated for leg angiography. The new technique is based on interactively moving the acquired-data window in conjunction with the use of a novel data acquisition order. When performed in conjunction with a single intravenous injection of contrast agent, this approach allows a comprehensive, three-dimensional study of the vasculature tree from the level of renal artery bifurcations through to the feet in about a minute. This paper reports on a proof-of-concept and on some specific acquisition orders.

Keywords: magnetic resonance imaging, peripheral magnetic resonance angiography, fast imaging

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