Non-contrast MRA of the Finger and Toe Using time-Spatial Labeling Inversion Pulse (time-SLIP) technique

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Purpose
1. To selectively visualize arteries of the finger and toe without contrast media using time-spatial labeling inversion pulse (time-SLIP) MRA.
2. To optimize and compare this technique with other non-contrast MRA methods.
3. To display clinical cases of hand and foot MRA.

Content
1. Basic principles of non-contrast time-SLIP MRA.
2. Optimization of examination parameters and positions.
3. Efficacy of depicting the arterial arch and digital arteries in the finger and toe using the time-SLIP technique compared with other non-contrast MRA techniques, 2D time-of-flight and MR digital subtraction angiography using ECG-gated 3D half Fourier FSE applied with Flow-spoiled Gradient Pulses (Flow-spoiled FBI).
4. Combination with swap phase encode extended data (SPEED) acquisition.
5. Correlation with age in non-contrast toe MRA.
6. Several diseases in which non-contrast MRA of the whole hand and foot was effective.

Summary
Due to the recent concerns of Gadolinium-related Nephrogenic Systemic Fibrosis, non-contrast MRA alternatives have gained interest. The time-SLIP technique allows selective visualization of small and slow flow arteries, which is of increasing significance in our aging population.

References
3) Kanazawa H and Miyazaki M, ISMRM 2002, p140

Fig. 1) Non-contrast time-SLIP MRA of the finger on a 28-year-old male (a) and the toes using SPEED acquisition on a 23-year-old male (b). Note that Time-SLIP MRA was effective of depicting small, tortuous, and branched arteries.