Contrast-enhanced MR angiography: Is the test-dose contrast bolus consistent with the main dose bolus?

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Purpose: To verify the similarity between time-intensity curves (TICs) acquired by test and main dose contrast injections for MR angiography.

Materials and Method: In 11 patients, repeated contrast-enhanced 2D-turbo-FLASH scans with 1-sec interval were performed. Both test and main dose TICs were acquired from the abdominal aorta and parameters of TICs for test and main boluses were compared. The parameters used were arterial and venous enhancing times(Tae and Tve), arterial peak-enhancing time(Tp), arteriovenous transit time(Tt), bolus length(BL), and bolus expansion ratio(BER).

Results: The main bolus had 1.05 and 1.10 times longer Tae and Tt than the test-bolus, with significant correlation. The BL was definitely longer than the infusion time. The BERs were variably different between test and main boluses without significant correlation.

Conclusion: Only the arterial enhancing time and the arteriovenous transit time of the main bolus were predictable from the test bolus results.