

The effect of viscosity and injection volume of gadolinium agent on bolus transit time in contrast enhanced MRA.

정기웅, 정태섭, 이영준

연세대학교 의과대학 진단방사선과학교실, 방사선의과학 연구소

Purpose: To evaluate the effect of viscosity and volume of injected gadolinium agent on bolus transit time in contrast enhanced MRA.

Materials and Method: Sixty consecutive patients were classified into three groups (n=20) according to gadolinium agent used (A: 4.9, B: 3.2, C: 2.8mpcs at 20C). Three sessions of test bolus imaging were conducted on the each group members by varying injection volume of contrast following saline flush (1ml contrast plus 15ml saline flush, 1ml contrast plus 29ml saline flush and 15ml contrast with 15ml saline flush). A 1.5T MR machine (Vision, Siemens, Germany) with turbo-FLASH sequence (TR/TE/FA/Acquisition time = 5.8ms/1.4ms/10/1sec) was used for test bolus imaging. Contrast agent with following saline flush was introduced into right antecubital vein using mechanical injector (Medrad, USA). At the same time, acquisition was started and repeated without interval for 40seconds. Then, a carotid arterial time - signal intensity curve was obtained from raw data using region of interest (ROI) circle placed at the C3 vertebra level. Bolus transit time was considered as the time of peak signal intensity. Data were statistically analyzed.

Results: Mean bolus transit time from the right antecubital vein to carotid artery in each group was 14.001.97(A), 14.351.72(B) and 13.951.60sec(C) respectively with 1ml contrast plus 15ml saline flush. Similar results were noted with 1ml contrast plus 29ml saline flush and 15ml contrast with 15ml saline flush. There were no statistical differences in mean transit time among three kinds of gadolinium agent having different viscosities (p value = A: 0.7408, B: 0.5870, C: 0.9946). Also, the volume of gadolinium and saline flush was no significant effect on bolus transit time (p value=0.1318).

Conclusion: The viscosity and injection volume of gadolinium agent has no significant effect on bolus transit time in test bolus imaging for contrast enhanced MRA.