Nonionic Intraarterial Contrast Agent Overdose Causing Generalized Seizures and Presenting on CT as Subarachnoid Hemorrhage: Case Series and Implications

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Purpose
To demonstrate that clinically significant intraarterial nonionic contrast overdose does occur, to show its CT appearance in three cases, and to suggest how this phenomenon may be prevented.

Materials & Methods
Retrospective review of pertinent clinical data was done on three patients who had generalized seizures following percutaneous coronary angioplasty and whose head CT scans demonstrated iodine in the subarachnoid space mimicking subarachnoid hemorrhage.

Results
The current series of three patients all received greater than 500 ml of iohexol 350 mg/ml during coronary angiography and percutaneous transluminal coronary angioplasty. All three patients developed generalized seizures following the procedures and then had head CT scans demonstrating iodine in a subarachnoid distribution. Two of the three patients were in status epilepticus and did not return to their neurologic baseline. All three patients had normal renal function prior to the procedures and had negative lumbar punctures for subarachnoid hemorrhage following their abnormal CT scans.

Conclusion
This is the first reported case series of this phenomenon occurring from low osmolality contrast agents. There have been approximately five similar individual case reports which all involved high osmolality agents. This is important knowledge for neuroradiologists because the presumed safety of large volumes of nonionic contrast agents (>500 ml) has been reported in large case series for both neurinterventional and coronary interventional procedures in recent years.

Though the use of standard nonionic low osmolality contrast agents represents a significant advance over high osmolality agents, they remain hypertonic and thus can be neurotoxic in large doses. The use of newer isoosmolar agents such as iodixanol should be considered for intraarterial procedures in which use of greater than 500 ml of contrast is anticipated.

References