Swedish study finds higher renal failure rate for Visipaque than Hexabrix

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Patients who receive iso-osmolar contrast media have a significantly higher risk of renal failure than those receiving low-osmolar contrast media.

With the introduction of iso-osmolar contrast media, radiologists looked forward to the day when severe adverse reactions to x-ray contrast would be eliminated. That day has yet to come, at least as far as the long-term effects of such agents, according to a large retrospective Swedish study. That research identified a significantly higher rate of renal failure among patients administered iso-osmolar iodixanol (Visipaque) compared with patients who received low-osmolar ioxaglate (Hexabrix).

Dr. Per Liss and colleagues from the radiology, physiology, and cardiology departments at the University of Uppsala in Sweden presented their evaluation of 23,224 patients at the 2008 RSNA meeting. They found that 1.7% of patients who received iodixanol developed primary or secondary renal failure within 12 months of administration. The 12-month renal failure rate for patients who received ioxaglate was 0.8%.

Unlike previous studies comparing the two agents, no significant difference was seen the percentage of patients placed on dialysis in the year after receiving a percutaneous coronary intervention (PCI) enhanced with either of the two agents, Liss noted. The study determined that dialysis was required in the 12-month follow-up period in 0.2% of patients who received iodixanol, compared with 0.1% of patients who received ioxaglate.

Ioxaglate is an ionic dimer and iodixanol is a nonionic dimer. The iodine concentration for both is an identical 320 mg/ml. The osmolarity of ioxaglate is 600 mOsm/kg H$_2$O compared with 200 mOsm/kg H$_2$O for iodixanol.

Patient experience was established via the Swedish Coronary Angiography and Angioplasty Registry. It was used to identify patients who received a PCI. The Swedish Hospital Discharge Registry helped determine which PCI patients were treated in a hospital for nephropathy within 12 months of contrast media exposure.

The validity of associating renal failure with a contrast media for up to a year after its administration was challenged during questioning after Liss's presentation.

Differences in viscosity between the two contrast agents causes a variation in the rate of osmotic diuresis that may explain the relatively high renal failure rate for iodixanol, Liss said. He recommended a randomized prospective clinical trial to confirm the findings.

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- Initial research challenges contrast reaction dogma
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