Iodinated contrast medium

It is a form of intravenous radiocontrast agent (radiographic dye) containing iodine, which enhances the visibility of vascular structures and organs during radiographic procedures. Some pathologies, such as cancer, have particularly improved visibility with iodinated contrast.

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A common misconception that even exists among healthcare professionals is that an allergy to contrast media is related to an allergy to seafood (usually shellfish) because both share iodine in their construction, implicating iodine as a source.

Numerous studies have shown that although iodine is common in contrast media, iodine is not the cause of allergic reactions to contrast media and instead the more likely culprit are the inert ingredients and the patient's past history of having other strong allergic reactions.

One important distinction is that allergic effects are by definition immunoglobulin E related histamine storms and studies have shown that contrast media cause no such reaction in vivo thereby refuting the possibility that contrast media or the iodine in it is likely to be an allergen. Although it may seem contradictory, the few rare cases of contrast medium mediated IgE are exceedingly rare compared to all adverse reactions and when they happen, are often because the patient already has multiple risk factors that suggest the patient has other allergy related problems.

Historically, contrast media was sometimes highly dangerous but these dangers were not wellunderstood during the development of the early types of contrast media, such as Thorotrast.

Complications

Iodinated contrast (IV or intra-arterial) may delay the excretion of metformin (Glucophage®, Avandamet[®]), an oral hypoglycemic agent used in type 2 diabetes, and can be associated with lactic acidosis and renal failure (particularly in patients with CHF or those consuming alcohol). The manufacturer recommends withholding metformin 48 hrs prior to and following contrast administration (or longer if there is evidence of declining renal function following the use of contrast). Metformin should also be held \approx 48 hours before any surgery, and should not be restarted post-op until the patient has fully recovered and is eating and drinking normally. The maximum dose of iodine with normal renal function is \approx 86 gm in a 24-hour period.

lonic contrast, if accidentally injected into the intrathecal space during routine imaging studies or interventional procedures, may significantly interfere with neuronal activity, potentially causing ascending tonic-clonic seizure syndrome and even death. As a result, ionic contrast is strictly contraindicated for intrathecal use. Rapid recognition of the condition followed by prompt management, typically involving aggressive cerebrospinal fluid (CSF) drainage, is critical to improving patient outcome. Lumbar drain has previously been well described as a management strategy.

lodine-based contrast medium used in diagnostic and therapeutic cerebrovascular imaging may cause renal toxicity, especially in patients with underlying renal impairment. Contrast dilution may impede efforts of the neurointerventionalist to treat intracranial vascular pathology.

Serafin et al. found a high incidence of nephropathy in neurosurgical patients after intra-arterial CM

administration. The renal function values and incidence of nephropathy following LOCM administration were not statistically different from those following IOCM administration ¹⁾.

Case reports

A case of accidental intrathecal injection of an ionic contrast agent, iothalamate meglumine, in a patient undergoing cervical epidural steroid injection. This patient was managed successfully with drainage of CSF using an external ventricular drain (EVD) alone.

The literature review and analysis of the previously published cases demonstrate that aggressive CSF drainage is essential to improve outcomes, and in some cases an EVD alone may be effectively utilized ²⁾.

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Serafin Z, Karolkiewicz M, Gruszka M, Strózecki P, Lasek W, Odrowaz-Sypniewska G, Manitius J, Beuth W. High incidence of nephropathy in neurosurgical patients after intra-arterial administration of lowosmolar and iso-osmolar contrast media. Acta Radiol. 2011 May 1;52(4):422-9. doi: 10.1258/ar.2011.100501. Epub 2011 Mar 9. PubMed PMID: 21498279.

Hudson JS, Abode-Iyamah K, Nagahama Y, Reddy CG. Accidental intrathecal injection of ionic contrast: case report and review of the literature. World Neurosurg. 2016 Oct 17. pii: S1878-8750(16)31007-5. doi: 10.1016/j.wneu.2016.10.019. PubMed PMID: 27765719.

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