

# An Unusually Delayed Systemic Anaphylactic Reaction to Iodinated Contrast Media

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## ABSTRACT

**Delayed reactions to iodinated contrast media are rare. Even more rare are delayed systemic anaphylactic reactions. A case of a delayed systemic anaphylactic reaction to sodium iothalamate is presented which highlights the importance of keeping patients under observation for at least ½ an hour after being given conventional contrast media intravenously.**

In 1902 Portier and Richet observed that dogs given a second injection of extracts of sea anemones several weeks after the first, often became acutely ill and died within a few minutes<sup>1</sup>. The response was called anaphylaxis (from the Greek "ana" for against, and "phylaxis" for protection). The clinical manifestations in man include dyspnoea, hypertension, flushing and itching, circulatory collapse, acute lower airway obstruction, laryngeal oedema and urticaria. The clinical response in anaphylaxis and "anaphylactoid" reaction is the same, except that in the latter it is not mediated by antigen antibody interaction. Signs of anaphylaxis usually come on immediately but may be delayed for up to 15 minutes after intravascular injection of the offending compound. A systemic anaphylactic reaction starting 25 minutes after an intravascular injection of iodinated contrast media is very rare<sup>2, 3</sup>.

## THE CASE

A 26 year old unmarried Indian male, domestic cleaner, was admitted to the Salmaniya Medical Centre with acute right ureteric colic radiating to the groin, of several hours duration, associated with nausea and vomiting. A plain film of the abdomen showed right renal and ureteric stones. Two years earlier while in India the patient had a similar attack

and an x-ray then, but without the use of contrast studies, showed "kidney stones". He refused surgery. Since then he had had many similar but less severe attacks, none requiring hospitalisation. He had no hypertension, diabetes or cardiorespiratory problems and no known allergies. There was no family history of systemic illness or allergies. He was given pethidine 75 mg IM, started on IV fluids and prepared for admission.

On admission his BP was 130/80, pulse 78/min regular temperature 98.6° F and physical examination was negative except for mild tenderness in the right renal area. Blood collected on the day of admission showed slight disturbance of the serum electrolytes, Ca Oxalate crystals, and no growth on culture.

The control IVU film showed right renal and ureteric stones as before. 60 cc sodium iothalamate were injected in the right antecubital vein over one minute.

He was well until 25 minutes later when he complained of itching and difficulty in breathing, and was found to have general urticarial rash, his eyelids were swollen and peripheral cyanosis was noted. The pulse was of low volume and difficult to record. The BP was unrecordable. An IV drip of normal saline was started, and within 2 minutes the patient received 400 mg hydrocortisone IV by push, 30 mg IV benadryl, and aminophyllin 25 mg by slow IV injection. Simultaneously he was given oxygen by mask at a rate of 5 l/min. Within minutes he "felt better", the BP was 125/0, and a regular pulse of 100/min was recorded. There were no cardiac murmurs, and the lungs were clear. His vital signs were stable 10 minutes later. At this time there was no cyanosis, so the oxygen was gradually tapered off. He continued to feel better but after 30 minutes started to vomit; this promptly responded to stemetil 12.5 mg given intramuscularly. After 2 hours the rash had almost disappeared, the pulse was of good

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volume and regular, and his BP returned to the pre-IVU level of 130/80. He was kept on IV fluids and hydrocortisone 6 hourly IV for the next 2 days. His IVU showed right renal and ureteric stones with obstructive changes, for which he underwent right ureterolithotomy and pyelolithotomy a few days later. Two weeks post-operatively he was discharged in good general condition, and resumed normal work 3 weeks later.

## DISCUSSION

The clinical side effects of iodinated contrast media can be divided into two types:

1. Those that are clearly dose dependent such as pain, sensation of heat, renal damage and some of the circulatory problems. These are blamed on the hyperosmolality of the solution.
2. Those that are virtually dose independent. They can occur after administration of just a few drops of contrast medium while, on the other hand, they cannot be provoked even by the rapid injection of highly concentrated contrast medium at high dose. They are also termed general reactions, and include the allergic skin reactions, anaphylaxis and the anaphylactoid reactions. They have little if anything to do with the osmolality of the solution.

The overall incidence of untoward reactions to iodinated contrast media ranges from 4.63% to 8.53%<sup>4, 5, 6</sup>. 20-30% of these are anaphylactic in nature. In all of these studies anaphylactic reaction appeared within minutes of the IV injection of the contrast medium, usually an ionic compound. Comparing the frequency of anaphylactoid reactions during IVU using sodium iothalamate at two different temperatures (37°C and room temperature), a total incidence of 8% for anaphylactoid reaction was reported<sup>7</sup>, being mild in 7% and moderate in 1% with a time of onset ranging from 6-20 minutes (mean: 12 minutes). Rest of the reactions were pruritis and urticarial lesions. Treatment with diphenhydramine was necessary in only one patient. This patient developed flushing, palatal pruritis, cough, nasal congestion and wheezing ten minutes after the start of the infusion of 300 cc sodium iothalamate (Conray 30) given over 8 minutes. In "experience with metrizamide in patient with previous severe anaphylactoid reaction to ionic contrast

agents", six cases were described<sup>8</sup>, ranging in age from 12-73 years. In no patient did the anaphylactoid reaction to the ionic contrast agent appear later than 2 or 3 minutes. Non-cardiogenic pulmonary oedema as part of the complex of symptoms grouped under anaphylactoid reaction with or without prior prophylactic medication has been reported by several authors<sup>9, 10</sup>. In all situations, the onset of the signs and symptoms was described as either "within minutes" or "shortly after" the IV injection of the contrast medium, usually a conventional ionic compound. In one of the 2 patients reported by Greganti and Flowers<sup>11</sup>, although the non-cardiogenic pulmonary oedema developed two hours later, the patient did develop generalized urticaria shortly after the infusion of 300 cc diatrizoate meglumine 30%.

## CONCLUSION

**In conclusion, anaphylactic adverse reactions to iodinated contrast media are not very rare. But the symptoms and signs usually come on "within minutes". Nevertheless, potentially fatal anaphylactic reactions may be delayed for up to nearly 30 minutes, as illustrated in this case report, and therefore, it is important to keep patients under observation for at least ½ an hour after being given conventional contrast media intravenously.**

## REFERENCES

1. Eisen HN. Microbiology. Hagerstown, Maryland: Harper & Row, 1980;467-492.
2. Levy JH, Roizen MF, Morris JM. Anaphylactic and anaphylactoid reactions: A review. *Spine* 1986;11:282-291.
3. Rappoport S, Bookstein JJ, Higgins CB, Carey PH, Sovak M, Lasser EC. Experience with metrizamide in patients with previous severe anaphylactoid reactions to ionic contrast agents. *Radiology* 1982; 143:321-325.
4. Davies P, Roberts MB, Roylance J. Acute reactions to urographic contrast media. *Br Med J* 1975;2:434-437.
5. Shehadi WH. Contrast media adverse reactions: occurrence, recurrence and distribution patterns. *Radiology* 1982;143:11-17.
6. Panto PN, Davies P. Delayed reactions to urographic contrast media. *British Journal of Radiology* 1986;59:41-44.
7. Turner E, Kentor P, Melamed JL, Rao G, Zeits HJ. Frequency of anaphylactoid reactions during intravenous urography with radiographic contrast media at two different temperatures. *Radiology* 1982;143:327-329.



8. Holtas S. Iohexol in patients with previous adverse reactions to contrast media. *Invest Radiol* 1984;19:563-565.
9. Boden W. Anaphylactoid pulmonary edema ("shock lung") and hypotension after radiologic contrast media injection. *Chest* 1982;81:760-761.
10. Borish L, Matloff SM, Findlay SR. Radiographic contrast media — induced non-cardiogenic pulmonary edema: case report and review of the literature. *J Allergy Clin Immun* 1984;74(1):104-107.
11. Greganti MA, Flowers WMJr. Acute pulmonary edema after the intravenous administration of contrast media. *Radiology* 1979;132:583-585.