CASE REPORT

Iodide mumps following fistulogram in a haemodialysis patient

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SUMMARY

Iodide mumps, or contrast-induced acute sialadenitis, is characterised by rapid, painless enlargement of the salivary glands, following the use of iodinated contrast dye. The underlying mechanism of this adverse reaction is not completely understood. It could be due to an idiosyncratic reaction or related to deposition of iodide in the ductal systems of the salivary glands causing blockage and inflammation. With increasing renal dysfunction, the elimination half-life of the iodine-containing contrast dye gets prolonged. The course of iodine-induced sialadenitis is usually benign, and rapid resolution of symptoms is expected without definite treatment. The symptomatic management includes treatment with a parenteral non-steroidal anti-inflammatory drug (NSAID), steroids and dialysis. However, the role of steroids has been found to be controversial in previously published case reports. Pancreatic mumps and transient thyroid dysfunction were also reported in patients following iodinated contrast administration; the aetiology of this is thought to be similar to iodide-induced sialadenitis.

media. The amount of dye injected was 15 cc. It showed stenosis at the junction of the right subclavian and superior vena cava. Balloon angioplasty was performed, and repeat fistulogram showed good resolution of stenosis with 10% remaining. After the procedure, the patient was observed for 4 h in the postoperative recovery room and sent home without immediate complication.

The next day, she woke up with lower facial and upper neck swelling ([figure 1](#)). Some of the initial differential diagnoses considered on presentation included infective sialadenitis, sialolith, trauma, superior vena cava obstruction and Ludwig's angina. However, the patient did not have any signs of superior vena cava obstruction, such as superficial venous prominence on the chest, arm oedema, cyanosis and plethoric face, on physical examination. She also denied hoarseness of voice and difficulty breathing, but did report pain on opening her mouth. Bilateral tender submandibular glands were noted on the physical examination.

BACKGROUND

Iodide mumps, or contrast-induced acute sialadenitis, is characterised by rapid, painless enlargement of the salivary glands, following the use of iodinated contrast dye. The underlying mechanism of this adverse reaction is not completely understood. It could be due to an idiosyncratic reaction or related to deposition of iodide in the ductal systems of the salivary glands causing blockage and obstruction.^{1 2} The onset of symptoms can start from within a few minutes to 5 days after contrast administration.² The course of iodine-induced sialadenitis is usually benign, and rapid resolution of symptoms is expected without definite treatment. The symptomatic management includes treatment with a parenteral non-steroidal anti-inflammatory drug (NSAID), steroids and dialysis.³

CASE PRESENTATION

We report a case of a 65-year-old African-American woman with end-stage renal disease, on haemodialysis three times a week, who presented to the emergency room with facial and upper neck swelling 1 day after undergoing a fistulogram.

The medical history was significant for increasing right arm swelling for the past 2–3 weeks and inability to access the right arm arteriovenous (AV) fistula for dialysis. A fistulogram was performed to check the patency of the AV fistula with Visipaque (iodixanol), non-ionic iodine-containing contrast

INVESTIGATIONS

Initial laboratory tests including complete blood count, metabolic panel, electrolytes and acid–base were essentially normal apart from an elevated white cell count (WCC) of 11 000, but no bacteraemia. Blood urea nitrogen and Cr values were also high commensurate with end-stage renal disease. CT of the neck and face showed enlarged bilateral submandibular glands with infiltration of adjacent fat planes and diffused soft tissue swelling in the submandibular region and upper neck ([figure 2](#)).

TREATMENT

The patient was started on ampicillin + sulbactam on the first day, for a possible infective cause of sialadenitis. The medications were stopped the next day as there were no signs of infection, such as fever, chills and tachycardia, and no pus discharge from the submandibular duct. A diagnosis of contrast-induced sialadenitis was made, and the patient was started on intravenous ketorolac, dexamethasone and fluid, and given pain management. An emergency intubation kit was prepared at the bedside for possible airway compromise, but it was not required. Haemodialysis was performed within 24 h of admission, and the submandibular swelling improved significantly in the next 2–3 days ([figure 3](#)). The patient was discharged in stable condition on an oral tapering dose of prednisone for 2 weeks.

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Figure 1 Significant swelling in lower face and upper neck around the submandibular glands on presentation.

DISCUSSION

Visipaque (iodixanol) is non-ionic iodine-containing contrast media favoured for its iso-molar properties. With normal renal function, 97% is excreted unchanged in the urine within 24 h.⁴ The probability of developing acute sialadenitis is directly proportional to serum iodide levels (>10 mg/100 mL) and inversely related to renal function.⁵ The injected dose of contrast does not usually result in sufficiently high iodide concentration, thus rarely causing sialadenitis in patients with normal renal function.⁶ However, with increasing renal dysfunction, the dye stays in systemic circulation for a longer time. Our patient was at an increased risk because of her end-stage renal failure. The delay in dialysis for the first 24 h after the fistulogram might have contributed further to the pathogenesis. The iodine in contrast dye

Figure 2 Non-contrast CT of the neck and face showing bilateral enlarged submandibular glands with infiltration of adjacent fat planes.

Figure 3 Significant improvement in facial swelling in 48–72 h after treatment with ketorolac, steroids and haemodialysis.

gets 100 times more concentrated in saliva than in plasma, resulting in inflammatory oedematous swelling and blockage of the salivary duct.⁷ There are also a few published case reports of pancreatic mumps and transient thyroid dysfunction; the aetiology of this is thought to be similar to iodide-induced sialadenitis. Facial nerve palsy, severe allergic vasculitis and erythematous dermis are some of the other associated adverse events reported with iodinated dye.⁶ Our patient did not have any of these symptoms, including thyroid swelling, abdominal pain, back pain, and nausea and vomiting. Amylase, lipase, thyroid-stimulating hormone, and free T4 and T3 were essentially normal.

Drug-induced sialadenitis is another differential diagnosis to be considered in similar clinical scenarios. Some drugs known to cause this condition include l-asparaginase, clozapine and phenylbutazone. However, our patient was not on any of the usual offending medications known to cause sialadenitis.⁸

Ultrasound (US) is an alternative imaging modality that can be used in place of CT scan. The typical US finding includes diffuse enlargement of the salivary glands with prominent low internal echoic septa.⁶

The role of steroids in the management of contrast-induced sialadenitis has been found to be controversial in published case reports, with no improvement on steroids in one particular case.⁵ Our patient improved significantly within 48–72 h after receiving steroids and ketorolac, and undergoing haemodialysis. Hence it is difficult to attribute the benefit to steroids alone.

Usual prophylactic regimens for iodide allergy were also ineffective in a previous case report, proving it to be more an idiosyncratic reaction than hypersensitivity.⁴ The reaction is probably a class effect because substituting one form of low-osmolar non-ionic contrast media for another did not prevent recurrences of the condition. The way to prevent recurrence of

iodide mumps is to avoid using intravenous iodinated contrast in those patients again, or performing urgent dialysis within 24 h if the use of iodinated dye is essential.⁹ There is absolutely no role for antibiotics in the management of iodide mumps, as the elevated WCC is always reactive in nature.

Learning points

- ▶ Iodine from iodinated contrast media may rarely elicit non-infectious inflammatory oedema of the salivary glands.
- ▶ Acute sialadenitis following contrast administration is characterised by rapid, painless, bilateral enlargement of the salivary glands.
- ▶ Iodide mumps is usually a benign, self-limiting condition and may recur with further exposure to iodinated contrast.
- ▶ The symptomatic management includes treatment with a parenteral non-steroidal anti-inflammatory drug, steroids and dialysis.

Competing interests None declared.

Patient consent Obtained.

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