

Available online at [www.sciencedirect.com](http://www.sciencedirect.com)

ScienceDirect

journal homepage: [www.elsevier.com/locate/radcr](http://www.elsevier.com/locate/radcr)

## Case Report

# Recurrent neck swelling after iodinated contrast media administration <sup>☆</sup>

Inês Machado Cunha, MD<sup>a,\*</sup>, Pedro Maganinho, MD<sup>b</sup>, Maria Luís Marques, MD<sup>a</sup>, João Pinheiro Amorim, MD<sup>b</sup>, Eva Gomes, MD<sup>a</sup>

<sup>a</sup>Immunoallergology Department, Centro Hospitalar Universitário do Porto, Largo do Prof. Abel Salazar, 4099-001, Porto, Portugal

<sup>b</sup>Radiology Department, Centro Hospitalar Universitário do Porto, Porto, Portugal

## ARTICLE INFO

## Article history:

Received 20 March 2021

Revised 24 March 2021

Accepted 25 March 2021

## Keywords:

Recurrent neck swelling

Iodinated contrast media

Suspected hypersensitivity reaction

Diagnosis

## ABSTRACT

A 74-year-old male with an abdominal aortic aneurism reported 2 episodes of neck swelling 16 hours after an abdominal CT with iodinated contrast media that reappeared in a subsequent CT, although the use of pre-medication. The tests used to exclude the hypersensitivity hypothesis were negative and once a new CT was needed we decided to do it with close monitoring. We performed a facial picture and cervical ultrasound exam before and 24 hours after the exam. The neck swelling and the ultrasound findings 24 hours after the CT made the diagnosis of contrast induced sialadenitis possible. Contrast induced sialadenitis is an uncommon adverse reaction to iodinated contrast media. As it presents with neck swelling it is important to exclude a hypersensitivity reaction because of its further limitations and make a differential diagnosis.

© 2021 The Authors. Published by Elsevier Inc. on behalf of University of Washington.

This is an open access article under the CC BY-NC-ND license

(<http://creativecommons.org/licenses/by-nc-nd/4.0/>)

## Introduction

Iodinated contrast media (ICM) and dyes are widely used for diagnosis and disease monitoring [1]. The increasing use of such substances carries an associated risk of hypersensitivity reaction reported to occur in 0.5%-3% of the exposed patients [1].

The appearance of a neck swelling after ICM exposure can raise the suspicion of a hypersensitivity reaction, however, differential diagnosis such as acute infection, salivary glands ductal obstruction, trauma, neoplasm,

or contrast induced sialadenitis (CIS) must be considered [2].

CIS manifests as a painless bilateral symmetric salivary gland edema probably due to the accumulation of iodine within the glands, causing a local inflammatory process [2]. It can appear within minutes after ICM administration of until 5 days [3,4]. Since the first case described in 1956 by J. Miller et al. few others have been reported [3,5]. These reactions can be under-reported as an incidence rate of 1%-2% has been described [2,6]. The diagnosis is mainly clinical and supported

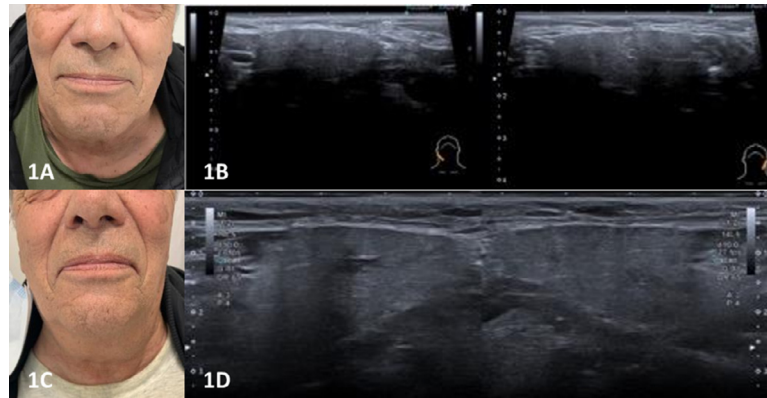
<sup>☆</sup> Competing interests: The authors declare that they have no conflicts of interest.

\* Corresponding author.

E-mail address: [inesrjmcunha@gmail.com](mailto:inesrjmcunha@gmail.com) (I.M. Cunha).

<https://doi.org/10.1016/j.radcr.2021.03.053>

1930-0433/© 2021 The Authors. Published by Elsevier Inc. on behalf of University of Washington. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>)



**Fig. 1 – (A) Frontal facial photographic registry before CT; (B) Submandibular ultrasound performed before CT showing submandibular glands with normal morphology, dimensions, and echogenicity; (C) Frontal facial photographic registry 24 hours after CT, with neck swelling and (D) Submandibular ultrasound 24 hours after CT with swollen submandibular glands with increased echogenicity of the parenchyma.**

by the findings in the salivary gland ultrasound. Symptomatic treatment is recommended when needed [2,7,8].

## Case report

We present a case of a male patient with 74-year-old that was sent for assessment at the Immunoallergy department because of recurrent neck swelling associated to ICM administration. The patient had a personal history of hypertension, dyslipidemia, small intestine angiodysplasia, papillary urothelial carcinoma, adrenal adenoma, and abdominal aortic aneurism. He denied a personal history of allergic diseases and had no documented impaired kidney function. He was under treatment with bisoprolol 2.5 mg, atorvastatin 10 mg, tansulosin 0.4 mg, and dutasteride 0.5 mg.

For the follow up of the abdominal aortic aneurism evolution, an annual abdominal CT was required.

The patient reported 2 episodes, 1 year apart, of symmetric neck swelling and mild local discomfort, that appeared approximately 16 hours after CT with ICM. In both episodes a 100 mL infusion of iopromide 769 mg/ml (Ultravist) was used.

The patient denied any other symptoms and association with exercise, food, drug intake (NSAID), or hymenoptera sting was discarded. The patient reported one previous contact with ICM during CT without any adverse reaction.

In both episodes, the patient did not need medical care and the symptoms spontaneously resolved in 2-3 days without any treatment. No similar episodes between these ones were reported.

At the immunoallergy appointment, the physical examination was unremarkable. The analytical study was normal. The patient was advised against the use of ICM and cutaneous test with ICM were scheduled.

While waiting for the scheduled diagnostic evaluation, the patient was submitted to a new abdominal CT with iopromide 769 mg/ml (Ultravist) in a total dose of 100 mL. A premedication protocol with methylprednisolone 16 mg (12 hours before

the procedure) together with clemastine 1 mg and methylprednisolone 16 mg (1 hour before) was done. Once more, 12 hours after the procedure, the patient describe the same symptoms that spontaneously resolved in 48 hours.

In the Immunoallergy department skin prick tests (SPT) and Intradermal tests (ID) were performed according to the EAACI and ENDA guidelines [9]. SPT with undiluted iopromide (300 mg/ml) was negative at the 20 minutes reading and the ID test with iopromide with a concentration of 1/10 (30 mg/ml) was also negative at 20 minutes and 48 hours reading.

The patient was advised against further use of ICM and instructed to contact the department in case of absolute need of administration.

Approximately 1 year after, collaboration was requested as the patient needed a new abdominal CT for aortic aneurism control. The procedure was programmed but before the exam facial photographic registry and a salivary gland's ultrasound were done and considered normal (Fig. 1a and b).

The patient was observed 12 hours and 24 hours after the procedure. In the 12-hour observation there wasn't any complaint or change on physical examination but in the last appointment, the patient presented with cervical enlargement and it was evident a neck swelling (Fig. 1c).

A new salivary gland ultrasound was done that showed swollen submandibular glands with noticeable increased echogenicity of the parenchyma, comparing to the previous examination (Fig. 1d).

## Discussion

Our patient presented with 2 episodes of bilateral neck swelling, 12-16 hours after CT with ICM administration reappearing in another subsequent exam, although the use of premedication.

Differential diagnosis of trauma or infection were excluded by clinical history and negative infection markers. The presence of recurrent angioedema after a known trigger was un-

likely considering the clinical history, time onset of symptoms and the recurrence under pre-medication. Besides the ICM hypersensitivity hypothesis, the most probable diagnosis was CIS [2].

In this clinical identity the most common affected salivary glands are the submandibular, followed by the parotid glands and only one recent case described a sublingual gland involvement [2,8].

To study an eventual hypersensitivity reaction to ICM, SPT, and ID were done but showed negative results. Considering the need for a new CT exam, the decision was the execution under close monitoring. In the 12-hour observation the patient denied any symptoms and there was no neck swelling. The patient returned to the Immunoallergology department 24 hours after ICM administration and at the time the neck swelling could be clearly observed.

To confirm the diagnosis of CIS a salivary gland ultrasound was done. In the presence of CIS, ultrasound findings typically demonstrate salivary glands' swelling with hypochoic septa, increased vascularity and dilated ducts without lithiasis evidence [2,10]. Our patient presented with swollen submandibular glands, with increased echogenicity of the parenchyma and dilated ducts, confirming the diagnosis of CIS.

The recommended treatment in CIS is only symptomatic and it is expected that symptoms could completely resolve in a period of few hours to 14 days [8]. In the present case our patient reported a total resolution within 2 days without the need for any medication [2].

Further ICM exposure is to be avoided as most probably sialadenitis will recur, however there is no absolute contraindication in the case of urgent need for life saving interventions [6].

---

## Funding

The authors declare that no funding was received for the present study.

---

## Author's contributions

Inês Machado Cunha: Conception and design of the work; acquisition analysis and interpretation; Writing and revising of

intellectual content and final approval of the writing. Pedro Maganinho: Acquisition, analysis and interpretation of data for the work; intellectual content revision and final approval of the writing. Maria Luís Marques; Conception and design of the work; acquisition analysis and interpretation; Writing and revising of intellectual content and final approval of the writing. Joao Pinheiro Amorim: Acquisition, analysis and interpretation of data for the work; intellectual content revision and final approval of the writing. Eva Gomes: Conception and design of the work; acquisition analysis and interpretation; Writing and revising of intellectual content and final approval of the writing.

---

## REFERENCES

- [1] Christiansen C, Brockow K. Adverse reactions during procedures; hypersensitivity to contrast agents and dyes. *Ann Allergy Asthma Immunol* 2020;124(2):156–64.
- [2] Jiao A, Farsad K, McVinnie D, Jahangiri Y, Morrison J. Characterization of iodide-induced sialadenitis: meta-analysis of the published case reports in the medical literature. *Academic Radiology* 2019;27(3):428–35.
- [3] Sánchez García S, Rubio Solís D, Terán Álvarez L, Calvo Blanco J. Acute sialadenitis as adverse reaction to iodinated contrast. *Radiologia* 2018;60:171–4.
- [4] Kim S, Grossberg J, Nogueira R, et al. Hyperacute unilateral contrast-induced parotiditis during cerebral angiography. *Radiol Case Rep* 2018;13:225–7.
- [5] Miller J, Sussman R. Iodide mumps after intravenous urography. *New Engl J Med* 1956;255(9):433–4.
- [6] Egan M, Maglione PJ. Multiple reasonably tolerated percutaneous coronary interventions in a patient with iodide mumps. *Ann Allergy Asthma Immunol* 2015;115:253–4.
- [7] Panasoff J, Nusem D. Iodide mumps. *World Allergy Org J* 2008;1(5):85–6.
- [8] Park K, Han A, Kim C, Tam K, Chhetri D. Case Report: contrast-induced sialadenitis of the sublingual glands. *Case Rep Otolaryngol* 2020;2020:1–4.
- [9] Brockow K, et al. Skin test concentrations for systemically administered drugs- an ENDA/EAACI Drug Allergy Interest Group position paper. *Allergy* 2013;68:702–12.
- [10] Park S, Hong S, Lee H, Joh J, Cha J, Kim HC. Ultrasound findings of iodide mumps. *Br J Radiol* 2005;78(926):164–5.