



Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.

Short communication

COVID-19 vaccination and low cervical lymphadenopathy in the two week neck lump clinic - a follow up audit

O.R. Mitchell^a, M. Couzins^b, R. Dave^b, J. Bekker^b, P.A. Brennan^{a,*}

^a Departments of Oral and Maxillofacial Surgery, Queen Alexandra Hospital, Portsmouth, PO6 3LY, UK

^b Departments of Clinical Radiology, Queen Alexandra Hospital, Portsmouth, PO6 3LY, UK

Accepted 13 April 2021

Available online 21 April 2021

Abstract

The UK COVID vaccination programme has progressed at an astonishing rate since the first patients received their doses in December 2020. It is well known that other vaccines including influenza and human papilloma virus (HPV) can result in reactive lymphadenopathy in the axilla and/or neck. Patients are now presenting via the two week wait neck lump clinic with supraclavicular fossa and low neck lymphadenopathy related to COVID vaccination, and to similar one stop breast clinics with axillary lymph nodes. In an audit of 80 patients seen over a period of one month, we found COVID vaccine-related low neck lymphadenopathy in four cases (5%), with an additional rectal cancer patient thought to have metastatic disease who presented with a Virchow type node. COVID vaccine-related lymphadenopathy should be considered in the differential diagnosis of low-neck nodes if they occurred shortly after vaccination, but it is important to exclude sinister disease using ultrasound and other investigations as necessary.

© 2021 The British Association of Oral and Maxillofacial Surgeons. Published by Elsevier Ltd. All rights reserved.

Keywords: COVID-19; vaccination; cervical lymphadenopathy; ultrasound

It has been over four months since the first COVID-19 vaccination was administered by the UK National Health Service (NHS) on 8 December 2020.¹ More than 30 million adults in the UK have now had their first dose and close to three million have also received the second dose. The amazing partnership between the NHS and patients will ensure that the number of recipients will increase over the summer months.² Common side effects include general malaise, headaches and tiredness, and soreness at the injection site (deltoid muscle).

Shortly after the COVID vaccine was introduced, we reported two cases of reactive supraclavicular lymphadenopathy following vaccination that presented at the same two-week neck lump clinic.³ Both patients had received the vaccination in the left upper arm and had subsequently

developed supraclavicular fossa lymphadenopathy a few days later that persisted for a few weeks. Ultrasound examination confirming reactive lymph nodes.

Since our report was published, others have published similar findings.^{4,5} As a result of the lymphatic drainage pattern from the arm, axillary lymphadenopathy would be a more likely occurrence^{5,6} with one study reporting how it can mimic breast cancer spread.⁶ Cervical lymphadenopathy is known to occur with other vaccines including influenza and human papillomavirus.^{7,8} Following our report,³ we prospectively audited presentations to the two-week neck lump clinic over a five week period with verified radiology reports on the Trust patient investigation results server (Minestrone). Patients were asked about their neck lump presentation, if they had received a recent COVID-19 vaccination, and if so whether they had also noticed any axillary lymphadenopathy.

A total of 80 patients were seen (16 per week). Four further patients, all of whom had been given a first dose of the vac-

* Corresponding author. Tel +44 2392 286736, Fax +44 2392 286089.
E-mail address: Peter.brennan@porthosp.nhs.uk (P.A. Brennan).

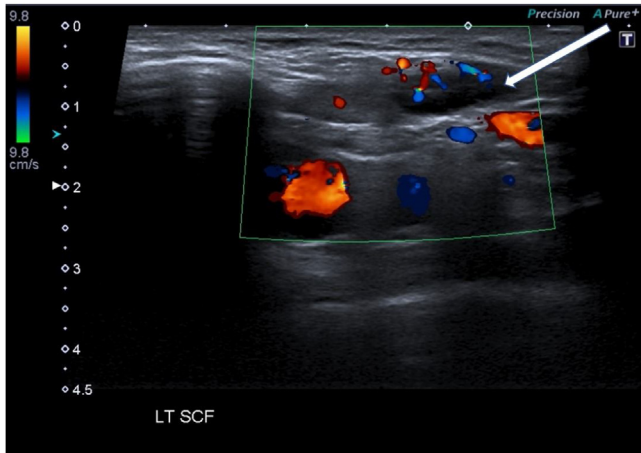


Fig. 1. Reactive left supraclavicular fossa node (white arrow) with colour flow Doppler confirming normal hilar vascularity. Blood flow through the subclavian artery can be seen deep to the lymph node.

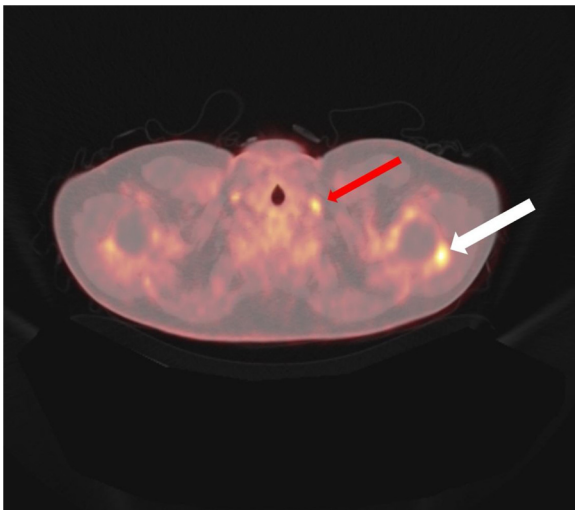


Fig. 2. PET-CT showing metabolically activity at COVID injection site (white arrow) and a left supraclavicular fossa node with SUV 5 (red arrow). Activity was also found in a small lymph node in the right supraclavicular fossa.

cine a few days before noticing supraclavicular fossa lymph nodes were identified (5% incidence in our audit). All four had reactive lymphadenopathy confirmed on ultrasound with colour flow Doppler to assess vascularity (Fig. 1). One additional patient who had an anterior resection in 2020 for rectal carcinoma presented to the colorectal MDT with left sided supraclavicular lymphadenopathy. He was investigated for a

possible Virchow node and metastatic spread with PET-CT. This confirmed increased metabolic activity at a recent left deltoid COVID vaccination site as well as left supraclavicular fossa lymphadenopathy (Fig. 2).

We wanted to raise awareness for colleagues of this seemingly increasing presentation to the neck lump clinic and how it should be considered in the differential diagnosis of low-neck nodes. It is clearly important to exclude more sinister causes including metastatic carcinoma from either above or below the clavicle, or lymphoma. In some instances, image guided fine needle aspiration cytology (FNAC) or core biopsy might be appropriate, or an interval follow up ultrasound scan may be considered.

Conflict of interests

We have no conflicts of interest.

Ethics statement/confirmation of patients' permission

Not applicable.

References

- <https://www.england.nhs.uk/2020/12/landmark-moment-as-first-nhs-patient-receives-covid-19-vaccination/>.
- <https://www.england.nhs.uk/statistics/statistical-work-areas/covid-19-vaccinations/>.
- Mitchell OR, Dave R, Bekker J, Brennan PA. Supraclavicular lymphadenopathy following COVID-19 vaccination: an increasing presentation to the two-week wait neck lump clinic? *Br J Oral Maxillofac Surg* 2021;**59**:384–5.
- Fernández-Prada M, Rivero-Calle I, Calvache-González A, Martín-Torres F. Acute onset supraclavicular lymphadenopathy coinciding with intramuscular mRNA vaccination against COVID-19 may be related to vaccine injection technique, Spain, January and February 2021. *Euro Surveill* 2021;**26**:2100193.
- Cohen D, Krauthammer SH, Wolf I, Even-Sapir E. Hypermetabolic lymphadenopathy following administration of BNT162b2 mRNA Covid-19 vaccine: incidence assessed by [¹⁸F]FDG PET-CT and relevance to study interpretation. *Eur J Nucl Med Mol Imaging* 2021;**27**:1–10.
- Mehta N, Sales RM, Babagbemi K, et al. Unilateral axillary lymphadenopathy in the setting of COVID-19 vaccine. *Clin Imaging* 2021;**75**:12–5.
- Shirone N, Shinkai T, Yamane T, et al. Axillary lymph node accumulation on FDG-PET/CT after influenza vaccination. *Ann Nuclear Med* 2012;**26**:248–52.
- Pereira MP, Flores P, Neto AS. Neck and supraclavicular lymphadenopathy secondary to 9-valent human papillomavirus vaccination. *BMJ Case Rep CP* 2019;**12**:e231582.