^{18}F -FDG PET-CT in adult-onset Still's disease

Hayato Shimizu, Hiroaki Nishioka

General Internal Medicine, Kobe City Medical Center General Hospital, Kobe, Hyogo, Japan

Correspondence to

Dr Hiroaki Nishioka;
nishiokahiroaki@hotmail.com

Accepted 15 March 2021

DESCRIPTION

A 36-year-old Japanese woman presented with a sore throat, arthralgia, rash and fever. Physical examination revealed enlarged cervical lymph nodes with tenderness. Laboratory tests revealed a white blood cell count of $32.3 \times 10^9/\text{L}$ with 98% neutrophils, a haemoglobin level of 125 g/L, a platelet count of $40.9 \times 10^4/\mu\text{L}$ and a C reactive protein level of 15.0 mg/dL. The serum ferritin and soluble interleukin-2 receptor concentration levels were 6436 ng/mL and 947 U/mL, respectively. Individual culture results, antinuclear antibody and rheumatoid factors were all negative. CT showed generalised lymphadenopathy and hepatosplenomegaly. Positron emission tomography–CT (PET-CT) revealed increased uptake of ^{18}F -fluorodeoxyglucose (FDG) in the cervical and axillary lymph nodes, diffuse bone marrow and spleen (figure 1A,B). We performed bone marrow aspiration and a cervical lymph node biopsy to detect the presence of malignant lymphoma; however, no findings showed any signs of the disease. The lymph node histology showed reactive lymphoid tissue. We diagnosed the patient with adult-onset Still's disease (AOSD) based on Yamaguchi's criteria¹ and markedly high level of ferritin and treated her with prednisolone and methotrexate. Her symptoms improved, and her C reactive protein level normalised.

AOSD is a systemic inflammatory disease of unknown aetiology and pathogenesis characterised by fever, rash, systemic organ involvement and arthralgia. There are no specific serological markers or imaging techniques for AOSD diagnosis. Therefore, several classification criteria are currently used for AOSD diagnosis, such as Yamaguchi's,¹ Cush's² or Fautrel's.³ Before reaching AOSD diagnosis, it is essential to rule out other diseases, especially malignant lymphoma as both diseases sometimes show similar clinical presentations.⁴

PET-CT can detect and diagnose many malignancies, and indications for PET-CT have increased rapidly. Some reports on patients with AOSD showed FDG accumulation in the spleen, bone marrow, lymph nodes, skin, joints, parotid glands or serous effusions.^{5–7} Although the definitive diagnosis cannot be made solely based on PET-CT findings in a case with suspected AOSD, these findings are useful to support the diagnosis and evaluation of disease activity.^{5–7} However, in some cases, the imaging findings of PET-CT in AOSD are similar to those observed in malignant lymphoma, which makes differential diagnosis difficult. Maximum bone marrow uptake in AOSD is reportedly lower than that in malignant lymphoma⁵; however, this trend has not been

Figure 1 Positron emission tomography–CT demonstrated an increased ^{18}F -fluorodeoxyglucose uptake among the cervical and axillary lymph nodes (A) as well as diffuse bone marrow (A, B) and spleen (A, B).

confirmed. In such cases, a biopsy may be indispensable for the diagnosis.

Although PET-CT cannot directly determine the diagnosis of AOSD, it plays important roles in

Learning points

- ▶ Adult-onset Still's disease (AOSD) is diagnosed by classification criteria and by the elimination of other diseases, especially malignant lymphoma.
- ▶ The characteristic findings of positron emission tomography–CT (PET-CT) in patients with AOSD show increased ^{18}F -fluorodeoxyglucose accumulation in the spleen, bone marrow and lymph nodes.
- ▶ PET-CT cannot directly determine the diagnosis of AOSD; however, PET-CT plays important roles in evaluating the involved lesions and guiding the biopsy of the involved organs.

© BMJ Publishing Group Limited 2021. No commercial re-use. See rights and permissions. Published by BMJ.

To cite: Shimizu H, Nishioka H. *BMJ Case Rep* 2021;**14**:e242717. doi:10.1136/bcr-2021-242717

evaluating the involved lesions and guiding the biopsy of the lymph nodes, bone marrow or other tissues.

Contributors HS collected the data and wrote the first draft of the manuscript. HN coordinated the project and edited the manuscript. Both authors have read and approved the final manuscript.

Funding The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

Competing interests None declared.

Patient consent for publication Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

ORCID iD

Hiroaki Nishioka <http://orcid.org/0000-0001-7619-0646>

REFERENCES

- 1 Yamaguchi M, Ohta A, Tsunematsu T, *et al.* Preliminary criteria for classification of adult still's disease. *J Rheumatol* 1992;19:424–30.
- 2 Cush JJ, Medsger TA, Christy WC, *et al.* Adult-Onset still's disease. clinical course and outcome. *Arthritis Rheum* 1987;30:186–94.
- 3 Fautrel B, Zing E, Golmard J-L, *et al.* Proposal for a new set of classification criteria for adult-onset still disease. *Medicine* 2002;81:194–200.
- 4 Dudzic E, Pawlak-Buś K, Leszczyński P. Adult-Onset still's disease as a mask of Hodgkin lymphoma. *Rheumatologia* 2015;53:106–10.
- 5 Yamashita H, Kubota K, Takahashi Y, *et al.* Clinical value of ¹⁸F-fluoro-dexoxyglucose positron emission tomography/computed tomography in patients with adult-onset still's disease: a seven-case series and review of the literature. *Mod Rheumatol* 2014;24:645–50.
- 6 Dong M-J, Wang C-Q, Zhao K, *et al.* 18F-Fdg PET/CT in patients with adult-onset still's disease. *Clin Rheumatol* 2015;34:2047–56.
- 7 Jiang L, Xiu Y, Gu T, *et al.* Imaging characteristics of adult onset still's disease demonstrated with 18F-FDG PET/CT. *Mol Med Rep* 2017;16:3680–6.

Copyright 2021 BMJ Publishing Group. All rights reserved. For permission to reuse any of this content visit <https://www.bmj.com/company/products-services/rights-and-licensing/permissions/>
BMJ Case Report Fellows may re-use this article for personal use and teaching without any further permission.

Become a Fellow of BMJ Case Reports today and you can:

- Submit as many cases as you like
- Enjoy fast sympathetic peer review and rapid publication of accepted articles
- Access all the published articles
- Re-use any of the published material for personal use and teaching without further permission

Customer Service

If you have any further queries about your subscription, please contact our customer services team on +44 (0) 207111 1105 or via email at support@bmj.com.

Visit casereports.bmj.com for more articles like this and to become a Fellow