



Case Report

Postoperative ¹⁸F-FDG-PET/CT documents efficacy of selective peripheral denervation for treating cervical dystonia

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ABSTRACT

Background: Cervical dystonia, characterized by involuntary contraction of the cervical muscles, is the most common form of adult dystonia. We compared the preoperative versus postoperative ¹⁸F-fluorodeoxyglucose (¹⁸F-FDG) positron emission tomography/computed tomography (PET/CT) scans to confirm the efficacy of selective peripheral denervation (SPD) for treating cervical dystonia.

Case Description: A 38-year-old male with the right-sided cervical dystonia underwent a left pallidothalamic tractotomy. However, the involuntary neck movement persisted and correlated with the ¹⁸F-FDG-PET/CT imaging that showed persistent FDG uptake in the right obliquus capitis inferior muscle. A subsequent SPD resulted in resolution of the dystonia that correlated with lack of further ¹⁸F-FDG-PET/CT uptake in the right obliquus capitis inferior muscle.

Conclusion: The postoperative ¹⁸F-FDG-PET/CT documented the efficacy of an SPD in resolving a patient's cervical dystonia.

Keywords: ¹⁸F-FDG-PET/CT, Cervical dystonia, Selective peripheral denervation, SPD

INTRODUCTION

Cervical dystonia, characterized by the involuntary contraction of the cervical muscles, is the most common form of adult dystonia. Preoperatively and postoperatively, dystonic muscles can be identified utilizing ¹⁸F-fluorodeoxyglucose (¹⁸F-FDG) positron emission tomography/computed tomography (PET/CT).^[2,3] Here, a patient underwent selective peripheral denervation (SPD) followed by resolution of dystonia and ¹⁸F-FDG-PET/CT findings thus confirming the effectiveness of the surgery.

CASE DESCRIPTION

A 38-year-old man was diagnosed with dystonia at the age of 37. He was unsuccessfully treated with trihexyphenidyl, clonazepam, and BT injections. He underwent a left pallidothalamic tractotomy but failed to improve over 3 postoperative months. When he was referred for an

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SPD, his Toronto Western Spasmodic Torticollis Rating Scale (TWSTRS) score (range 0–85) was 27. FDG (317 MBq) was injected into the patient at rest. The ¹⁸F-FDG-PET/CT imaging showed FDG uptake in the right obliquus capitis inferior muscle [Figure 1].

Surgery

The patient underwent a C1 right hemilaminectomy, with intradural dissection of the C1 and C2 anterior rootlets/removal of the dentate ligament [Figure 2]. Next, the space between the semispinalis capitis and cervicis was dissected to expose the posterior branches of the C-3 to C-6 spinal nerves. Following an SPD, the right rotation/dystonia of the neck improved and he was discharged 3 days later. Three months after discharge, the ¹⁸F-FDG-PET/CT showed complete disappearance of the increased FDG uptake in the right obliquus capitis inferior muscle [Figure 1]. Residual FDG uptake in the right splenius capitis and left sternocleidomastoid was treated with Botox

injections. Six-month later, the patient's TWSTRS score improved to 5 and he was and remains asymptomatic.

DISCUSSION

SPD is an effective treatment operation for cervical dystonia.^[4,5] Preoperatively and postoperatively, dystonic muscles are readily detected by ¹⁸F-FDG PET/CT and SPECT/CT.^[1-3] In the present case, an abnormal FDG uptake in the right obliquus capitis inferior was detected through preoperative ¹⁸F-FDG-PET/CT. Following an SPD including an intradural rhizotomy of the anterior C1 and C2 nerve roots, the patient became asymptomatic. The ¹⁸F-FDG PET/CT confirmed the disappearance of the abnormal uptake in the right obliquus capitis inferior 3 postoperative months.

CONCLUSION

Here, we presented a patient whose cervical dystonia resolved following an SPD as confirmed by a postoperative ¹⁸F-FDG PET/CT.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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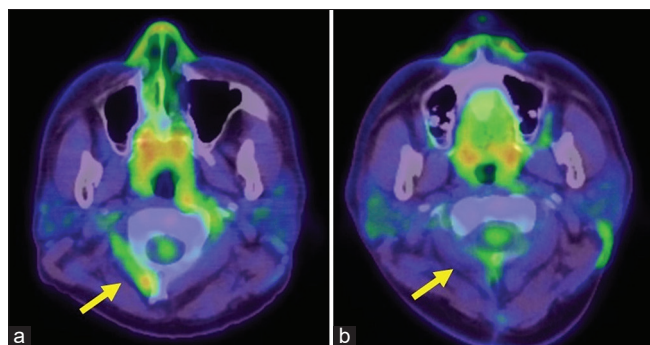


Figure 1: ¹⁸F-fluorodeoxyglucose (¹⁸F-FDG) positron emission tomography/computed tomography axial imaging. Preoperative image shows abnormally higher FDG uptake in the right obliquus capitis inferior (arrow) (a). Postoperative image shows the disappearance of FDG uptake in the right obliquus capitis inferior (arrow) (b).

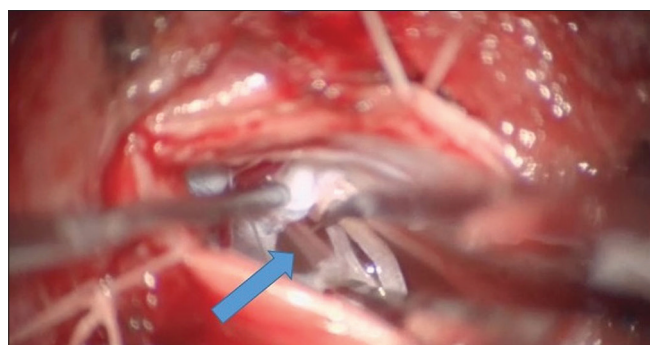


Figure 2: Perioperative image of selective peripheral denervation. The arrow shows the C1 anterior rootlet. Afterward, this nerve was cut.

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