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# **Pulmonary sclerosing pneumocytoma with lymph node metastasis and high $^{18}\text{F}$ FDG uptake in PET/CT: a rare case report and literature review**

**Key words:** Pulmonary sclerosing pneumocytoma(PSP); Positron emission tomography/computed tomography (PET/CT);  $^{18}\text{F}$ -fluorodeoxyglucose ( $^{18}\text{F}$ FDG); Maximum standardized uptake value ( $\text{SUV}_{\text{max}}$ )

# Research Summary

We present a rare case of PSP with an uncommon presentation.

Distinguishing feature of the case in the following aspects:

- Young woman—23y
- Larger tumors—9.1cm
- Lymph node metastasis
- Higher  $^{18}\text{F}$ FDG uptake: $\text{SUV}_{\text{max}}$  6.1— the third highest reported to date.
- Higher expression of ki-67—15%
- No tumor recurrence after surgery.

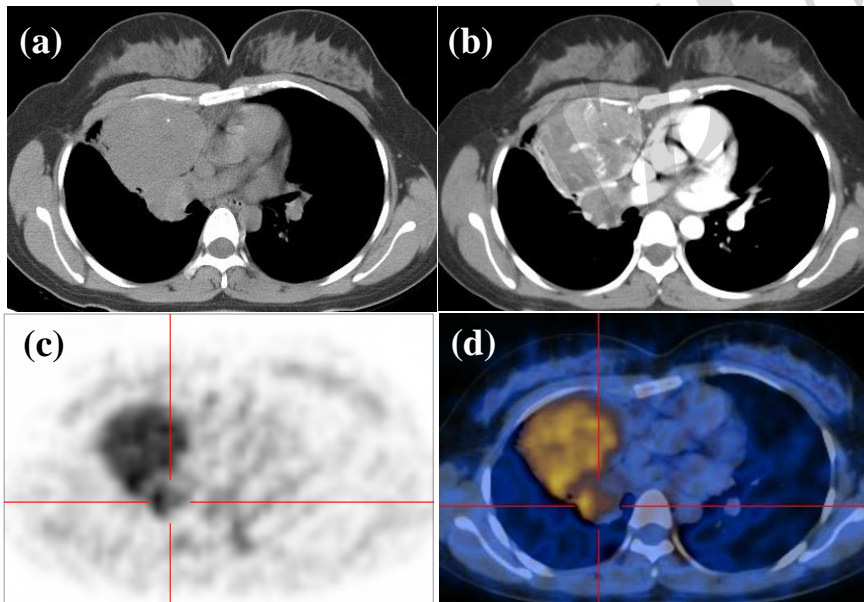


Fig. 1 Chest CT axial scan: plain (a) and enhanced (b), showing the right upper lobe tumor. The corresponding PET scan (c) and fused PET/CT scan (d) images show a relatively high uptake of FDG in the tumor ( $\text{SUV}_{\text{max}}=6.1$ ) and lymph node ( $\text{SUV}_{\text{max}}=5.1$ ).

# Innovation points

## ● Introduction of a new understanding of PSP

- PSP was originally referred to as pulmonary sclerosing hemangioma and was renamed by the WHO in 2015 because it lack vascular origin.
- PSP is not always benign, potential to metastasize, shows varying levels of  $^{18}\text{F}$ FDG intake,
- $\text{SUV}_{\text{max}}$  ranging from the background value to 6.4.
- The mechanism of metastasis and higher  $^{18}\text{F}$ FDG intake remains unclear.
- PSP easy to be misdiagnosed and treated improperly.

## ● Summary of possible related factors for PSP metastasis and higher $^{18}\text{F}$ FDG intake.

- The age and/or gender.
- Tumor size and/or location. (Fig.2)
- Hormone levels
- Tumor Ki-67 proliferation index.
- Further research is needed on more PSP patients.

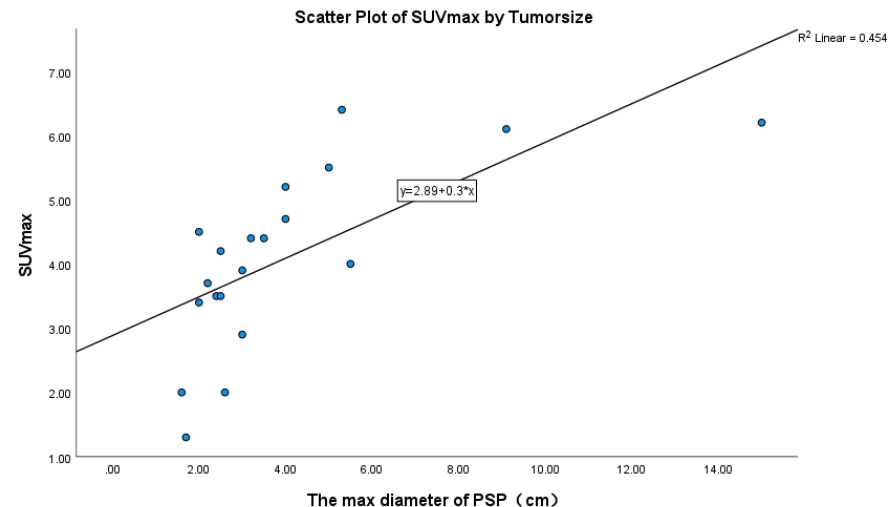


Fig. 2 Linear regression analysis showing the correlation between the maximum diameter of PSP lesions and  $\text{SUV}_{\text{max}}$  among all 20 PSPs were described in reports published in the last 10 years.

# *Innovation points*

- **Emphasis** on the correct diagnosis and treatment of PSP

## **Typical and benign manifestations:**

- Middle aged or elderly women
- Solitary nodule
- Well-defined mass
- Enlarged with no apparent necrosis

## **Rare and malignant imaging manifestations**

- Young patients,
- Lymph node metastasis
- Higher  $^{18}\text{F}$ FDG uptake

## **Treatment:**

- Follow-up: Asymptomatic patients with small tumors
- Surgery: Symptomatic patients with large tumors
- Favorable prognosis: even though it presents with large lesions, lymph node metastasis, and high  $^{18}\text{F}$ FDG uptake.



Fig. 3 Preoperative chest CT revealed a  $9.1 \times 5.5 \times 5.2$  cm mass in the right upper lobe



Fig. 4 Postoperative chest Digital Radiography show the lung mass and hilar lymph node were completely removed by surgery.