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Frequency and longitudinal changes of incidental spinal 18F-fluorodeoxyglucose (FDG) uptake in health checkups

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Research Article

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Tables 1 to 7 are available in the Supplementary Files section.

Frequency and longitudinal changes of incidental spinal ^{18}F-fluorodeoxyglucose (FDG) uptake in health checkups

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Abstract

Objective

This study aimed to investigate the frequency, anatomical distribution, and longitudinal changes of increased ^{18}F-fluorodeoxyglucose (FDG) uptake in the spine in asymptomatic health checkup participants, and to assess its clinical significance.

Methods

In total, 4882 participants who underwent FDG positron emission tomography/computed tomography (PET/CT) as part of health checkups were included. Spinal FDG uptake with a maximum standardized uptake value (SUVmax) ≥2.5 was defined as increased spinal FDG uptake. The SUVmax, spinal site, and spinal level were recorded. The frequency of increased spinal FDG uptake was analyzed according to age and sex. Among cases with increased spinal FDG uptake, the distribution of uptake was analyzed according to spinal anatomical site and level. Longitudinal changes in the SUVmax were evaluated in participants with increased spinal FDG uptake.

Results

Among all 4882 participants, the frequency of spinal FDG uptake with SUVmax ≥2.5 increased with age. In 847 participants with increased spinal FDG uptake, the most frequent sites of the increased uptake were the vertebral bodies (72.5%) and facet joints

(21.3%). Vertebral-body uptake was predominantly observed at the thoracolumbar junction (T11–T12) and in the lower lumbar spine (L4–L5); facet or interspinous joint uptake was concentrated in the lower lumbar spine (L3/4–L4/5). Among the 346 participants who underwent serial FDG PET/CT examinations, 88.7% participants showed a decrease in spinal FDG uptake to an SUVmax of <2.5.

Conclusion

Most incidental increases in spinal FDG uptake detected during health checkups decreased on follow-up, suggesting that these incidental findings are usually transient and likely benign in asymptomatic individuals.

Keywords

^{18}F-FDG PET/CT, spinal FDG uptake, incidental findings, health screening

Abbreviations:

FDG, ^{18}F-fluorodeoxyglucose

OR, odds ratio

PET/CT, positron emission tomography/computed tomography

SUV, standardized uptake value

SUVmax, maximum standardized uptake value

Introduction

^{18}F-fluorodeoxyglucose positron emission tomography/computed tomography (FDG PET/CT) is widely used for the diagnosis and staging of malignant tumors and is also applied to the evaluation of various conditions, including infectious, inflammatory, and cardiovascular diseases. In Japan, FDG PET/CT is performed as a part of health checkups for asymptomatic individuals [1]. However, FDG uptake is not tumor-specific and can be observed in normal physiological processes and benign lesions. Therefore, understanding the patterns of physiological FDG uptake throughout the body as well as the uptake characteristics of benign lesions is essential for the accurate interpretation of FDG PET/CT findings [2, 3].

Physiological FDG uptake is observed in several organs, including the brain, salivary glands, myocardium, liver, and gastrointestinal tract, and urinary excretion results in FDG accumulation in the urinary tract [4, 5]. Physiological FDG uptake can also be observed in the spine, and relatively higher uptake has been reported in the lower thoracic vertebrae, possibly reflecting the distribution of red bone marrow [6, 7]. In addition, increased spinal FDG uptake may be associated with various conditions, including metastatic tumors, infection, inflammatory diseases, and degenerative changes. Previous studies have

reported that increased FDG uptake may occur in degenerative spinal lesions in association with inflammatory activity [8, 9]. However, the frequency and natural course of incidental spinal FDG uptake detected during health checkups remain poorly understood. Misinterpretation of non-malignant findings with limited clinical significance may lead to unnecessary additional examinations or treatments and may also cause patient anxiety.

This study was conducted to evaluate the frequency, anatomical distribution, and longitudinal changes of increased spinal FDG uptake on FDG PET/CT in asymptomatic health checkup participants without a history of malignancy or spinal surgery. We aimed to clarify the clinical significance of incidental spinal FDG uptake by investigating its natural course in health checkup participants.

Materials and Methods

Participants

This retrospective study included consecutive participants aged ≥20 years who underwent FDG PET/CT as part of health checkups at our institution between June 2020 and February 2025. Participants with a history of malignancy or spinal surgery and those with missing imaging data were excluded (Fig. 1). All participants were confirmed to have no fever or clinical symptoms prior to FDG PET/CT examination. This study protocol was approved by the institutional review board at our institution (approval number: 20190204), and the requirement for informed consent was waived.

FDG PET/CT acquisition

All participants underwent FDG PET/CT using a Biograph mCT64 scanner (Siemens Healthineers, Erlangen, Germany). After fasting for at least 6 hours, PET/CT scans were performed 1 h after the intravenous injection of ^{18}F-FDG (3.3–3.6 MBq/kg). The CT portion was acquired as a reduced-dose, non-contrast-enhanced, and non-gated scan. Non-gated PET data were reconstructed using a Gaussian filter with an ordered subset expectation maximization algorithm (iterations, 3; subsets, 21; Gaussian filter [FWHM], 6 mm).

Imaging analysis

Spinal FDG uptake with a maximum standardized uptake value (SUVmax) of ≥2.5 was defined as increased spinal FDG uptake, because this cutoff has been commonly used as a reference value for abnormal FDG uptake in oncologic FDG PET imaging [10]. Areas with standardized uptake value (SUV) of ≥2.5 were highlighted in color using the Syngovia workstation (Siemens Healthineers, Erlangen, Germany). For cases with increased spinal FDG uptake, a region of interest was placed on the spinal site showing the highest SUVmax, and the SUVmax value, spinal site, and spinal level were recorded (Fig. 2). All images were independently evaluated by one of four radiologists experienced in FDG PET/CT interpretation, as high inter-observer reproducibility has been reported for SUVmax measurements in FDG PET/CT [11].

Statistical analysis

Statistical analyses were performed to evaluate the associations between increased spinal FDG uptake and participant characteristics. In 4882 participants, the association between age and increased spinal FDG uptake was evaluated using the Cochran–Armitage trend test across 10-year age groups, and odds ratios (ORs) were estimated using logistic

regression analysis with age as a continuous variable. The association between sex and increased spinal FDG uptake was assessed using the chi-square test. In 847 participants with increased spinal FDG uptake, the distribution of uptake according to the spinal site and level was analyzed, and the distribution of spinal levels within each spinal site was further examined. Further, among these 847 participants, 346 participants who underwent subsequent follow-up FDG PET/CT scans as part of health checkups were evaluated for longitudinal changes in increased spinal FDG uptake. Changes in SUVmax were categorized as follows: negative conversion, defined as a decrease in SUVmax to <2.5; decrease, defined as a ≥20% reduction from baseline; stable, defined as a change of <20% from baseline; and increase, defined as a ≥20% increase from baseline. The frequency of each category was assessed. A change of ≥20% from baseline was considered significant based on test–retest repeatability data for SUVmax, as the coefficient of variation in FDG PET acquisitions under identical conditions has been reported to be approximately 4–10%, indicating that changes beyond ±20% are unlikely to reflect measurement variability alone [12, 13]. Among participants with increased spinal FDG uptake, the proportions of longitudinal changes were analyzed according to age group, sex, and the spinal site and level. Statistical significance was set at $p < 0.05$. All analyses were performed using SPSS version 30.0.0.0 (IBM Corp., Armonk, NY, USA), JMP Student

Edition 18.2.0 (SAS Institute Inc., Cary, NC, USA), and R version 4.5.1 (R Foundation for Statistical Computing, Vienna, Austria).

Results

Participant characteristics and prevalence of increased spinal FDG uptake

In total, 4995 participants underwent FDG-PET/CT as part of a health checkup. Of these, 105 participants with a history of malignancy, four with prior spinal surgery, and four with missing data were excluded from the analysis. The final study population included 4882 participants, with a total of 8860 screening examinations. The mean age of the participants was 52.7 ± 10.9 years. Among these participants, 847 (17.3%) demonstrated increased spinal FDG uptake. Participant characteristics are summarized in Table 1. The proportion of participants with increased spinal FDG uptake increased with advancing age, and this trend was statistically significant according to the Cochran–Armitage trend test ($Z = 5.91$, $p < 0.001$) (Table 2). Logistic regression analysis indicated that a 10-year increase in age was associated with higher odds of increased spinal FDG uptake (OR 1.23, 95% CI: 1.15–1.31; $p < 0.001$). No significant difference in increased spinal FDG uptake was observed between male and female participants (chi-square test, $\chi^2 = 3.02$, $p = 0.08$; Table 3), and the OR for males compared with females was 1.15 (95% CI: 0.98–1.34).

Anatomical distribution of increased spinal FDG uptake

Among 847 participants with increased spinal FDG uptake, the median SUVmax was

2.82 (IQR: 2.68–3.07). Increased FDG uptake was primarily observed in the vertebral bodies (72.5%), followed by the facet joints (21.3%) (Fig. 3). Spinal-level analysis showed that increased FDG uptake was more frequently observed caudal to T8 than cranial to T7, with particularly high frequencies at the thoracolumbar junction (T11–T12) and in the lower lumbar spine (L4–L5) (Fig. 4). When stratified by the spinal site, increased FDG uptake in the vertebral bodies was mainly observed at the thoracolumbar junction (T11–T12) and in the lower lumbar spine (L4–L5); increased FDG uptake in the facet and interspinous joints occurred predominantly in the lower lumbar spine (L3/4–L4/5) (Fig. 5).

Longitudinal changes in spinal FDG uptake

Of 847 participants with increased spinal FDG uptake, 346 underwent serial FDG PET/CT examinations as part of their health checkups. The median follow-up period was 735 days (IQR: 379–1097), with a median of three scans (IQR: 2–4) per participant. Among these 346 participants, 88.7% (95% CI: 85.0–91.6) showed negative conversion in SUVmax. In participants with SUVmax ≥2.5 after follow-up, 0.9% (95% CI: 0.3–2.5) showed a decrease in SUVmax; 7.5% (95% CI: 5.2–10.8) showed stable in SUVmax; and 2.9% (95% CI: 1.6–5.2) showed an increase in SUVmax (Fig. 6). These findings indicate

that, in most cases with spinal FDG uptake ≥2.5, the SUVmax decreased to <2.5 over time. Because of sample size imbalances across age, sex, spinal sites, and spinal levels, and the small number of cases in categories other than negative conversion, statistical comparisons of longitudinal spinal FDG uptake changes were not performed (Tables 4–7).

Discussion

To the best of our knowledge, this is the first longitudinal study to demonstrate that incidental spinal FDG uptake observed in FDG PET/CT performed during a health checkup is predominantly transient and decreases over time. The frequency of increased spinal FDG uptake showed an age-related increase, and the most commonly affected sites were the vertebral bodies at the thoracolumbar junction (T11–T12) and lower lumbar spine (L4–L5), and the facet joints in the lower lumbar spine (L3/4–L4/5). Follow-up data revealed that 88.7% cases showed a reduction of the SUVmax to <2.5, suggesting that these findings are benign in asymptomatic individuals undergoing health checkups. By analyzing longitudinal FDG PET/CT data from a large cohort of health checkup participants, this study evaluated the natural course of increased spinal FDG uptake.

In the present study, most cases with increased spinal FDG uptake subsequently decreased to an SUVmax <2.5, indicating that incidental spinal FDG uptake is often transient and resolves over time. A nationwide questionnaire survey of cancer screening in Japan suggested that the cancer discovery rate on FDG PET is 1.35%, with all detected cases being early-stage cancers. Primary bone tumors have not been reported, and the detection of malignant bone lesions is rare [14]. These findings suggest that incidental spinal FDG

uptake in asymptomatic individuals undergoing health checkups is likely to represent a benign phenomenon, and may provide a basis for avoiding unnecessary additional investigations. However, because rare cases of advanced or highly aggressive malignancies can occur, the careful evaluation of increased spinal FDG uptake is warranted.

In this study, FDG uptake was relatively prominent in the vertebral bodies of the thoracolumbar junction, and in the vertebral bodies and the facet joints of the lower lumbar spine. In the thoracolumbar junction, increased FDG uptake in the vertebral bodies may partly reflect the distribution of red marrow. Previous studies have reported that FDG uptake within vertebral bodies increases from the thoracic to the sacral spine, peaking around T11, which is thought to reflect the distribution of red marrow [7]. Additionally, because this region is located at the transition between the relatively rigid thoracic spine and the highly mobile lumbar spine, it is considered prone to concentrated mechanical stress [15]. Mechanical stress–induced microdamage is repaired through bone remodeling [16]. The associated increase in metabolic activity, including reparative and inflammatory cellular processes, may account for the observed FDG uptake. Degenerative changes are more commonly observed in the lower lumbar spine [17-19],

likely due to the distinct mechanical environment of this region, including shear loads and altered axial load transmission [20]. In the facet joints, FDG uptake likely reflects local bone remodeling and inflammatory activity associated with these degenerative processes, consistent with previous reports [8]. Previous studies have not reported a consistent association between increased FDG uptake and Modic type I endplate changes, which reflect bone marrow edema [21]. However, in the present study, FDG uptake in the vertebral bodies was frequently observed in the lower lumbar spine, where degenerative changes are common. This finding raises the possibility that metabolic activity associated with degenerative processes, such as local inflammation or bone remodeling, could contribute to FDG uptake in this region. Additionally, a previous study reported that morphological severity of degeneration does not necessarily correlate with FDG uptake, suggesting that FDG uptake may reflect metabolic activity related to inflammation or bone remodeling rather than structural degeneration itself [22]. However, evaluation of degenerative severity was not performed in this study, and a relationship between the extent of degeneration and FDG uptake could not be assessed.

This study has some limitations. First, the study was conducted at a single institution and involved FDG PET/CT performed during health checkups, which may have limited the

generalizability of the findings. Moreover, the study population comprised asymptomatic individuals without a history of malignancy or spinal surgery. Therefore, the interpretation of increased spinal FDG uptake in symptomatic patients or those with suspected malignancy requires further investigation. Second, the observed association between age and increased spinal FDG uptake does not establish causality, and residual confounding factors cannot be excluded. Third, most cases of increased spinal FDG uptake decreased to an SUVmax of <2.5 on follow-up, suggesting a benign process; however, a comprehensive evaluation with pathological confirmation or additional imaging was not performed, precluding a definitive interpretation. Finally, increased spinal FDG uptake was defined using SUVmax ≥2.5, a commonly used cutoff in oncologic PET, but the frequency of uptake may vary if different thresholds are applied.

In conclusion, the findings of the present study suggest that most incidental spinal FDG uptake detected on FDG PET/CT performed during health checkups is transient and is likely to represent a benign finding in asymptomatic individuals. Therefore, these findings may provide useful information when considering the necessity of additional investigations.

References

1. Yasuda S, Ide M. PET and cancer screening. Ann Nucl Med. 2005;19(3):167-77.
2. SINGH C, GUPTA M, Prasad R, Virmani R, Virmani S, Singh J, et al. Physiological and Normal Variations in FDG uptake: A pictorial review. Journal of Nuclear Medicine. 2017;58(supplement 1):980-.
3. Metser U, Even-Sapir E. Increased (18)F-fluorodeoxyglucose uptake in benign, nonphysiologic lesions found on whole-body positron emission tomography/computed tomography (PET/CT): accumulated data from four years of experience with PET/CT. Semin Nucl Med. 2007;37(3):206-22.
4. Hess S, Blomberg BA, Zhu HJ, Høilund-Carlsen PF, Alavi A. The pivotal role of FDG-PET/CT in modern medicine. Acad Radiol. 2014;21(2):232-49.
5. Ahmad Sarji S. Physiological uptake in FDG PET simulating disease. Biomed Imaging Interv J. 2006;2(4):e59.
6. Aras M, Dede F, Ones T, Inanır S, Erdıl TY, Turoglu HT. Evaluation of physiological FDG uptake in the skeleton in adults: is it uniformly distributed? Rev Esp Med Nucl Imagen Mol. 2014;33(5):286-9.
7. Shen G, Liang M, Su M, Kuang A. Physiological uptake of 18F-FDG in the vertebral bone marrow in healthy adults on PET/CT imaging. Acta Radiol. 2018;59(12):1487-93.
8. Rosen RS, Fayad L, Wahl RL. Increased 18F-FDG uptake in degenerative disease of the spine: Characterization with 18F-FDG PET/CT. J Nucl Med. 2006;47(8):1274-80.
9. Aliyev A, Saboury B, Kwee TC, Torigian DA, Basu S, Wulff Christensen H, et al. Age-related inflammatory changes in the spine as demonstrated by (18)F-FDG-PET:observation and insight into degenerative spinal changes. Hell J Nucl Med. 2012;15(3):197-201.
10. Khalaf M, Abdel-Nabi H, Baker J, Shao Y, Lamonica D, Gona J. Relation between nodule size and 18F-FDG-PET SUV for malignant and benign pulmonary nodules. J Hematol Oncol. 2008;1:13.
11. Büyükdereli G, Güler M, Şeydaoğlu G. Interobserver and Intraobserver Variability among Measurements of FDG PET/CT Parameters in Pulmonary Tumors. Balkan Med J. 2016;33(3):308-15.
12. Lodge MA. Repeatability of SUV in Oncologic (18)F-FDG PET. J Nucl Med. 2017;58(4):523-32.
13. Lindholm H, Staaf J, Jacobsson H, Brolin F, Hatherly R, Sânchez-Crespo A. Repeatability of the Maximum Standard Uptake Value (SUVmax) in FDG PET. Mol Imaging Radionucl Ther. 2014;23(1):16-20.
14. Ide M, Suzuki Y. Is whole-body FDG-PET valuable for health screening? For. Eur J Nucl Med Mol Imaging. 2005;32(3):339-41.

15. Sun PD, Zhang XX, Zhang YW, Wang Z, Wu XY, Wu YC, et al. Stress analysis of the thoracolumbar junction in the process of backward fall: An experimental study and finite element analysis. Exp Ther Med. 2021;22(4):1117.
16. Seref-Ferlengez Z, Kennedy OD, Schaffler MB. Bone microdamage, remodeling and bone fragility: how much damage is too much damage? Bonekey Rep. 2015;4:644.
17. Kalichman L, Hunter DJ. Lumbar facet joint osteoarthritis: a review. Semin Arthritis Rheum. 2007;37(2):69-80.
18. Xia W, Liu C, Duan S, Xu S, Wang K, Zhu Z, et al. The influence of spinal-pelvic parameters on the prevalence of endplate Modic changes in degenerative thoracolumbar/lumbar kyphosis patients. PLoS One. 2018;13(5):e0197470.
19. Wang Y, Videman T, Battié MC. Modic changes: prevalence, distribution patterns, and association with age in white men. Spine J. 2012;12(5):411-6.
20. Basques BA, Espinoza Orías AA, Shifflett GD, Fice MP, Andersson GB, An HS, et al. The Kinematics and Spondylosis of the Lumbar Spine Vary Depending on the Levels of Motion Segments in Individuals With Low Back Pain. Spine (Phila Pa 1976). 2017;42(13):E767-e74.
21. Kreutzinger V, Ziegeler K, Chin CT, Han M, Bahroos E, Yoon D, et al. Bone remodeling, not inflammation, as the predominant pathology in modic type 1 lesions of the lumbar spine. Pain Med. 2026;27(1):53-61.
22. Patel PY, Dalal I, Griffith B. [(18)F]FDG-PET Evaluation of Spinal Pathology in Patients in Oncology: Pearls and Pitfalls for the Neuroradiologist. AJNR Am J Neuroradiol. 2022;43(3):332-40.

Figure legends

Fig. 1. Flowchart of case selection.

Flowchart illustrating the selection of the study participants and exclusion criteria. FDG, ^{18}F-fluorodeoxyglucose.

Fig. 2. Measurement of spinal SUVmax on FDG PET/CT images.

On axial fused FDG PET/CT images, areas with an SUV ≥ 2.5 were color-coded, and a ROI was placed over the spine to measure the SUVmax. The highest SUVmax identified within the spine, along with its spinal level and anatomical location, was recorded. In this case, the facet joint at the L4/5 level showed increased FDG uptake with an SUVmax of 3.6, which decreased to <2.5 on follow-up imaging one year later. FDG, ^{18}F-fluorodeoxyglucose; PET/CT, positron emission tomography/computed tomography; ROI, region of interest; SUV, standardized uptake value; SUVmax, maximum standardized uptake value.

Fig. 3. Distribution of spinal sites among 847 participants with increased spinal FDG uptake.

Percentages are shown above bars, and error bars indicate 95% confidence intervals.

The vertebral body was the most frequent site of increased FDG uptake (72.5%),

followed by the facet joint (21.3%), interspinous joint (3.9%), vertebral arch (1.8%), and spinous process (0.6%). Percentages may not sum to 100% due to rounding. FDG, ^{18}F-fluorodeoxyglucose.

Fig. 4. Distribution of spinal levels among 847 participants with increased spinal FDG uptake.

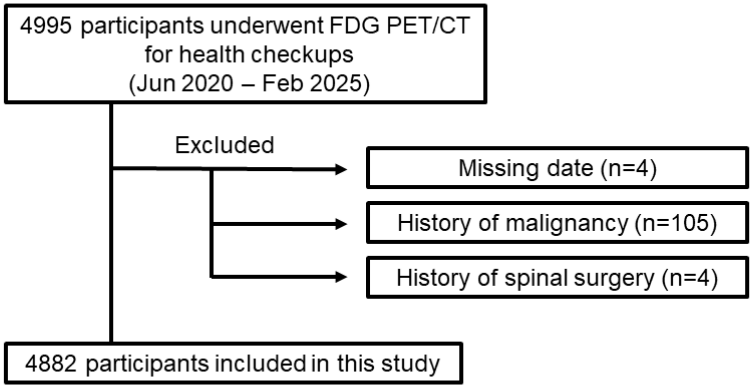
Increased FDG uptake was more frequently observed caudal to T8 than cranial to T7, with peaks at the thoracolumbar junction (T11–T12) and in the lower lumbar spine (L4–L5). FDG, ^{18}F-fluorodeoxyglucose.

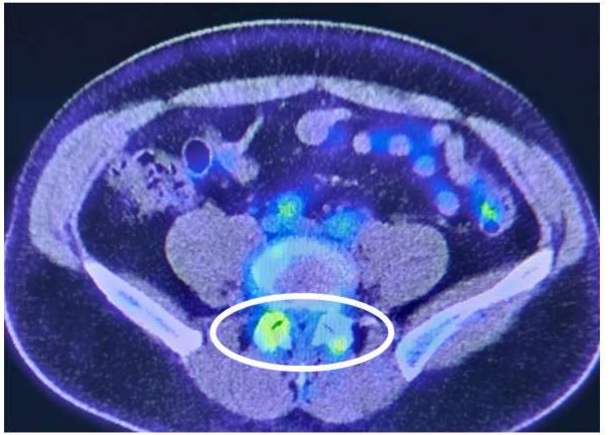
Fig. 5. Distribution of spinal levels according to the site of increased FDG uptake.

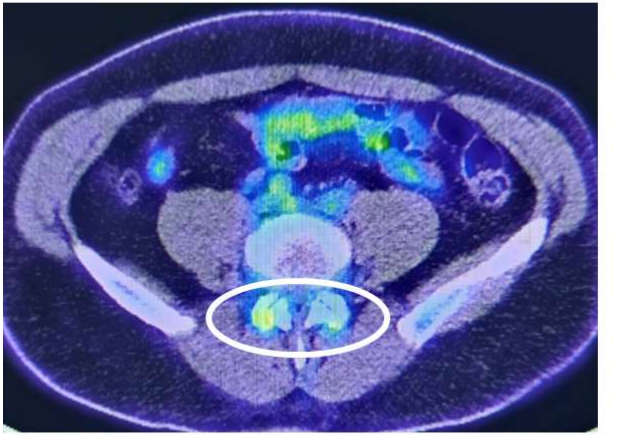
Regarding vertebral-body uptake, increased FDG uptake was more frequent below T8, with peaks at T11–T12 and L4–L5. Facet joint and interspinous joint uptake were most common in the lower lumbar spine (L3/4 to L4/5). FDG, ^{18}F-fluorodeoxyglucose.

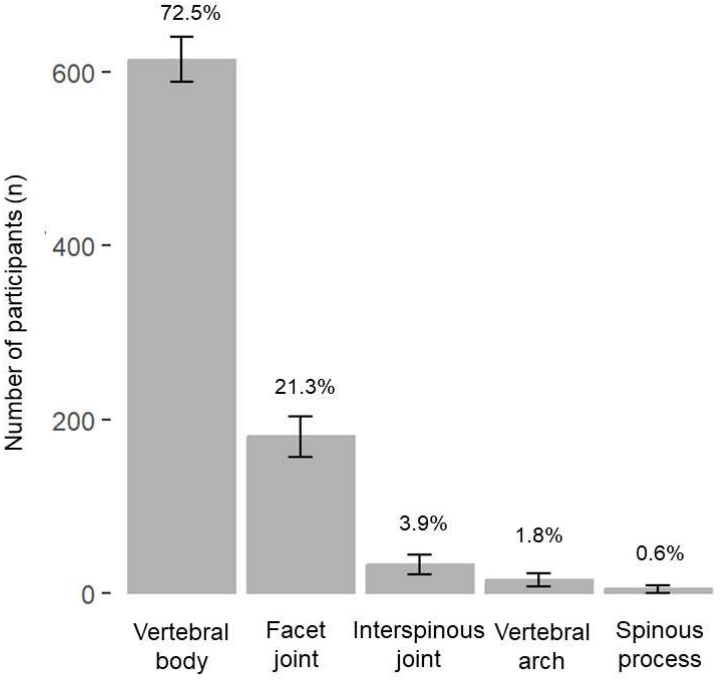
Fig. 6. Distribution of participants according to longitudinal changes in spinal FDG uptake.

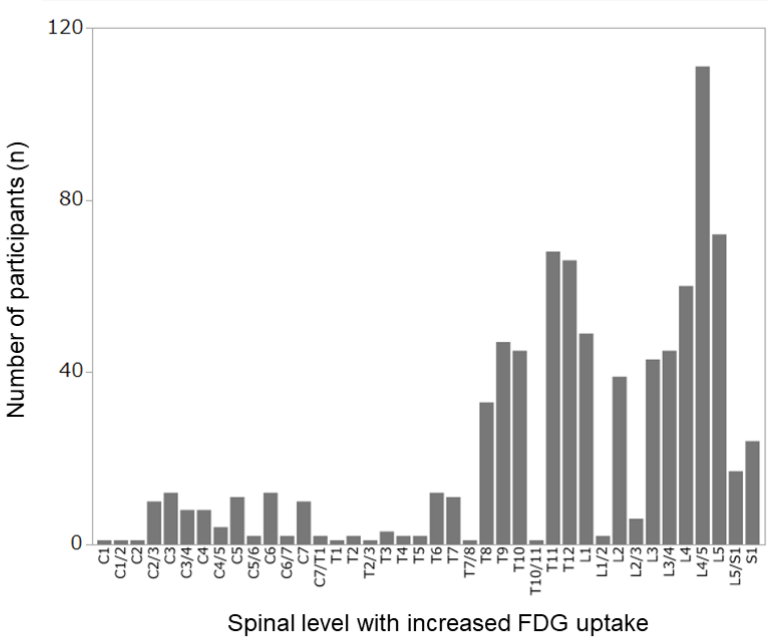
Bars represent the proportion of participants in each category. Numbers above bars indicate n (%) of participants. Error bars represent 95% confidence intervals for the proportion. Most participants showed negative conversion (88.7%). FDG, ^{18}F-fluorodeoxyglucose.


4995 participants underwent FDG PET/CT for health checkups (Jun 2020 – Feb 2025)
Excluded
Missing date (n=4)
History of malignancy (n=105)
History of spinal surgery (n=4)
4882 participants included in this study






72.5%
21.3%
3.9%
1.8%
0.6%
600
400
200
0
Number of participants (n)
Vertebral body
Facet joint
Interspinous joint
Vertebral arch
Spinous process


120
80
40
0
Number of participants (n)
C1
C1/2
C2
C2/3
C3
C3/4
C4
C4/5
C5
C5/6
C6
C6/7
C7
C7/T1
T1
T2
T2/3
T3
T4
T5
T6
T7
T7/8
T8
T9
T10
T10/11
T11
T12
L1
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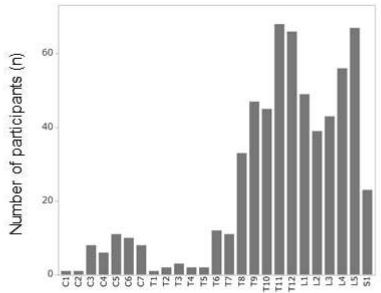
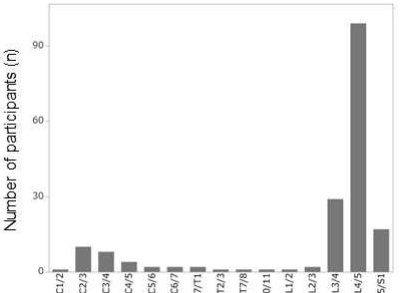
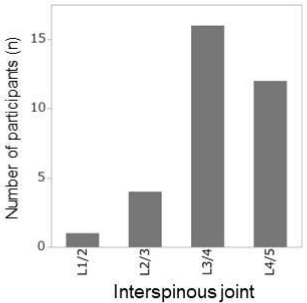
L5/S1
S1
Spinal level with increased FDG uptake



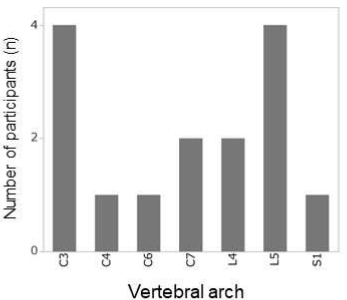
Vertebral body



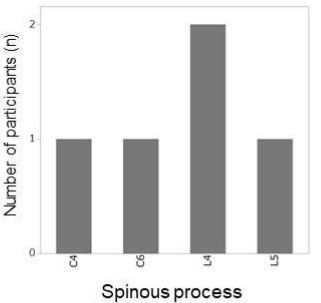
Facet joint



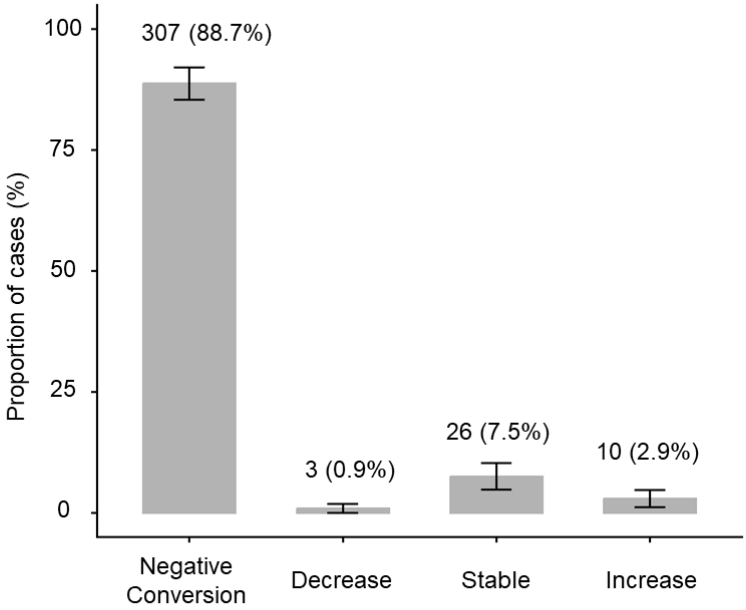
Interspinous joint



Vertebral arch



Spinous process


100
75
50
25
0
Proportion of cases (%)
307 (88.7%)
3 (0.9%)
26 (7.5%)
10 (2.9%)
Negative Conversion
Decrease
Stable
Increase

Supplementary Files

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- Table3.xlsx
- Table4.xlsx
- Table5.xlsx
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