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Prognostic Values of PET/CT Findings and Tumor/Patient Characteristics with Non-Small Cell Lung Cancer

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ABSTRACT

Background/Aim: Although numerous prognostic factors have been described for non-small cell lung cancer (NSCLC), there is still a requirement for better and non-invasive markers. FDG-PET is a non invasive diagnostic tool that is being used increasingly in the diagnosis of lung cancer. This study evaluates the prognostic values of PET/CT defined SUV measurements and other patient/tumor characteristics in newly diagnosed stage IIIB and IV NSCLC. **Method:** This retrospective study included 111 patients admitted between 2005 and 2006 with stage IIIB and IV NSCLC, whose diagnoses were verified with biopsy and staging performed with PET/CT. The prognostic values of standard uptake values (SUV) of the primary lesion on PET/CT, and other patient/tumor characteristics were analyzed using survival analysis. **Results:** SUV was found to be unrelated with survival. Only the presence of distant metastasis, type of metastasis (bone, brain, or the contralateral lung) and the type of radiotherapy used (curative or palliative) were found to be related to survival. SUV values in epidermoid carcinoma were found to be significantly higher compared to adenocarcinoma (16.15 ± 7.18 and 12.32 ± 5.52 , respectively, $p = 0.021$). **Conclusion:** Our findings do not support that SUV of the primary lesion in inoperable NSCLC has a prognostic value with respect to survival. This condition may be explained by the inclusion of significantly advanced NSCLC patients who are known to have a low survival and a high mortality, and also the relatively small sampling size.

KEYWORDS

Non-Small Cell Lung Cancer; Survival; Prognosis; Positron Emission Tomography (PET); FDG-PET

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References

- [1] D. M. Geddes, "The Natural History of Lung Cancer: A Review Based on Rates of Tumour Growth," *British Journal of Diseases of the Chest*, Vol. 73, No. 1, 1979, pp. 1-17. doi:10.1016/0007-0971(79)90002-0
- [2] S. G. Spiro and G. A. Silvestri, "One Hundred Years of Lung Cancer," *American Journal of Respiratory and Critical Care Medicine*, Vol. 172, No. 5, 2005, pp. 523-529. doi:10.1164/rccm.200504-5310E
- [3] D. Michael, M. D. Brundage, D. Davies, et al., "Prognostic Factors in Non-Small Lung Cancer: A Decade of Progress," *Chest*, Vol. 122, No. 3, 2002, pp. 1037-1057. doi:10.1378/chest.122.3.1037
- [4] B. E. Johnson, "Biologic and Molecular Prognostic Factors Impact on Treatment of Patients with Non-Small Cell Lung Cancer," *Chest*, Vol. 107, No. 6 Supplement, 1995, pp. 287S-290S. doi:10.1378/chest.107.6_Supplement.287S
- [5] O. Demirhan, A. Demirkaya, E. Ersen, et al., "Analysis of the Alterations of Trace Elements in Plasma and Tissue, in Lung Cancer," *Tüberküloz ve Toraks Dergisi*, Vol. 58, No. 1, 2010, pp. 53-58.
- [6] E. K. Pauwels, M. J. Riberio, J. H. Stoot, et al., "FDG Accumulation and Tumour Biology," *Nuclear*

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- [7] K. Sonmezoglu, " The Use of FDG-PET Scanning in Lung Cancer," *Tuberkuloz ve Toraks Dergisi*, Vol. 53, No. 1, 2005, pp. 94-112.
- [8] F. G. Duhaylongsod, V. J. Lowe, E. F. Patz Jr., et al., " Lung Tumor Growth Correlates with Glucose Metabolism Measured by Fluoride-18 Fluorodeoxyglucose Positron Emission Tomography," *The Annals of Thoracic Surgery*, Vol. 60, No. 5, 1995, pp. 1348-1352. doi:10.1016/0003-4975(95)00754-9
- [9] H. Vesselle, R. A. Schmidt, J. M. Pugsley, et al., " Lung Cancer Proliferation Correlates with [F-18] Fluorodeoxyglucose Uptake by Positron Emission Tomography," *Clinical Cancer Research*, Vol. 6, No. 10, 2000, pp. 3837-3844.
- [10] R. Sasaki, R. Komaki, H. Macapinlac, et al., " [18F] Fluorodeoxyglucose Uptake by Positron Emission Tomography Predicts Outcome of Non-Small-Cell Lung Cancer," *Journal of Clinical Oncology*, Vol. 23, No. 6, 2005, pp. 1136-1143. doi:10.1200/JCO.2005.06.129
- [11] J. F. Vansteenkiste, S. G. Stroobants, P. J. Dupont, et al., " Prognostic Importance of the Standardized Uptake Value on (18)F-Fluoro-2-Deoxy-Glucose-Positron Emission Tomography Scan In Non-Small-Cell Lung Cancer: An Analysis of 125 Cases. Leuven Lung Cancer Group," *Journal of Clinical Oncology*, Vol. 17, No. 10, 1999, pp. 3201-3206.
- [12] V. Ahuja, R. E. Coleman, J. Herndon, et al., " The Prognostic Significance of Fluorodeoxyglucose Positron Emission Tomography Imaging for Patients with Nonsmall Cell Lung Carcinoma," *Cancer*, Vol. 83, No. 5, 1998, pp. 918-924. doi:10.1002/(SICI)1097-0142(19980901)83:5<918::AID-CNCR17>3.0.CO;2-Y
- [13] K. Dhital, C. A. B. Saunders, P. T. Seed, et al., " [18F] Fluorodeoxyglucose Positron Emission Tomography and Its Prognostic Value in Lung Cancer," *European Journal of Cardiothoracic Surgery*, Vol. 18, No. 4, 2000, pp. 425-428. doi:10.1016/S1010-7940(00)00535-2
- [14] M. M. Oken, R. H. Creech, J. Horton, et al., " Toxicity and Response Criteria of the Eastern Cooperative Oncology Group," *American Journal of Clinical Oncology*, Vol. 5, No. 6, 1982, pp. 649-655. doi:10.1097/00000421-198212000-00014
- [15] World Health Organization, " WHO Handbook for Reporting Results of Cancer Treatment," World Health Organization, Publication, Geneva, 1979, pp. 16-21.
- [16] M. Paesmans, T. Berghmans, M. Dusart, et al., " Primary Tumor Standardized Uptake Value Measured on Fluorodeoxyglucose Positron Emission Tomography Is of Prognostic Value for Survival in Non-Small Cell Lung Cancer: Update of a Systematic Review and MetaAnalysis by the European Lung Cancer Working Party for the International Association for the Study of Lung Cancer Staging Project," *Journal of Thoracic Oncology*, Vol. 5, No. 5, 2008, pp. 612-619.
- [17] B. Goodgame, G. A. Pillot, et al., " Prognostic Value of Preoperative Positron Emission Tomography in Resected Stage I Non-Small Cell Lung Cancer," *Journal of Thoracic Oncology*, Vol. 3, No. 2, 2008, pp. 130-134. doi:10.1097/JTO.0b013e318160c122
- [18] L. Decoster, D. Schallier, H. Everaert, et al., " Complete Metabolic Tumour Response, Assessed by 18Fluorodeoxyglucose Positron Emission Tomography (18FDG-PET), after Induction Chemotherapy Predicts a Favourable Outcome in Patients with Locally Advanced Non-Small Cell Lung Cancer (NSCLC)," *Lung Cancer*, Vol. 62, No. 1, 2008, pp. 55-61. doi:10.1016/j.lungcan.2008.02.015
- [19] J. K. Hoang, L. F. Hoagland, R. E. Coleman, et al., " Prognostic Value of Fluorine-18 Fluorodeoxyglucose Positron Emission Tomography Imaging in Patients with Advanced-Stage Non-Small-Cell Lung Carcinoma," *Journal of Clinical Oncology*, Vol. 26, No. 9, 2008, pp. 1459-1464. doi:10.1200/JCO.2007.14.3628
- [20] Y. Tsutani, Y. Miyata, K. Misumi, et al., " Difference in Prognostic Significance of Maximum Standardized Uptake Value on [18F]-Fluoro-2-Deoxyglucose Positron Emission Tomography between Adenocarcinoma and Squamous Cell Carcinoma of the Lung," *Japanese Journal of Clinical Oncology*, Vol. 41, No. 7, 2011, pp. 890-896. doi:10.1093/jjco/hyr062
- [21] T. Ito, Y. Noguchi, S. Satoh, et al., " Expression of Facilitative Glucose Transporter Isoforms in Lung Carcinomas: Its Relation to Histologic Type, Differentiation Grade, and Tumor Stage," *Modern Pathology*, Vol. 11, No. 5, 1998, pp. 437-443.
- [22] W. C. Nugent, M. T. Edney, P. G. Hammerness, et al., " Non-Small Cell Lung Cancer at the Extremes of Age: Impact on Diagnosis and Treatment," *The Annals of Thoracic Surgery*, Vol. 63, No. 1, 1997,

- [23] S. Ramalingam, K. Pawlish, S. Gadgeel, et al., " Lung Cancer in Young Patients: Analysis of a Surveillance, Epidemiology and Results Database," *Journal of Clinical Oncology*, Vol. 16, No. 2, 1998, pp. 651-767.
- [24] C. M. Tsai, R. P. Perng and W. L. Huang, " Lung Cancer in Young Chinese," *Cancer Detection and Prevention*, Vol. 11, No. 3-6, 1988, pp. 235-238.
- [25] M. R. Palomares, J. W. Sayre, K. C. Shekar, et al., " Gender Influence on Weight-Loss Pattern and Survival of Non-Small Cell Lung Carcinoma Patients," *Cancer*, Vol. 78, No. 10, 1996, pp. 2119-2126. doi: 10.1002/(SICI)1097-0142(19961115)78:10<2119::AID-CNCR12>3.0.CO;2-1
- [26] R. J. Cerfolio, A. S. Bryant, E. Scott, et al., " Women with Pathologic Stage I, II, and III Non-Small Cell Lung Cancer Have Better Survival than Men," *Chest*, Vol. 130, No. 6, 2006, pp. 1796-1799. doi: 10.1378/chest.130.6.1796.