

complications set by the ROC curves, the suitable cut-off values of Goddard score and LAA% were estimated to be 1 and 0.7%, respectively. Postoperative respiratory complications were observed in 32% of the patients with Goddard score ≥ 1 and 25% of the patients with LAA% ≥ 0.7 . On multivariate analyses, Goddard score or LAA% was significantly correlated with postoperative respiratory complications in each analysis ($p < 0.001$ and $p = 0.016$, respectively).

Conclusions: Goddard score and %LAA measured using 3D-CT were more powerful predictors of postoperative pulmonary complications than FEV1% or any other factors. High-quality 3D-CT enables surgeons to construct the model of respiratory function analysis and plays important roles in not only surgical simulations but also the prediction of short-term surgical outcomes.

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P2-36.

3D analysis of apparent diffusion coefficient histograms in hepatocellular carcinoma: correlation with histological grade

(社会人大学院博士課程4年放射線医学)

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Background: To evaluate the usefulness of differentiation of histological grade in hepatocellular carcinoma (HCC) using three-dimensional (3D) analysis of apparent diffusion coefficient (ADC) histograms retrospectively.

Methods: The subjects consisted of 53 patients with 56 HCCs. The subjects included 12 well differentiated, 35 moderately differentiated, and nine poorly differentiated HCCs. Diffusion-weighted imaging (b-values of 100 and 800 s/mm²) were obtained within 3 months before surgery. Regions of interest (ROIs) covered the entire tumor. The data acquired from each slice were

summed to derive voxel-by-voxel ADCs for the entire tumor. The following parameters were derived from the ADC histogram: mean, standard deviation, minimum, maximum, mode, percentiles (5th, 10th, 25th, 50th, 75th, and 90th), skew, and kurtosis. These parameters were analyzed according to histological grade.

Results: A weak correlation was observed in minimum ADC and 5th percentile for each histological grade ($r = -0.340$ and $r = -0.268$, respectively). Minimum ADC showed significant differences among tumor histological grades ($P = 0.009$). The minimum ADC of poorly differentiated HCC was significantly lower than that of combined well and moderately differentiated HCC ($P = 0.001$). The sensitivity and specificity, when a minimum ADC of 400×10^{-6} mm²/s or lower was considered to be poorly differentiated HCC, were 100 and 54%, respectively.

Conclusion: Minimum ADC was most useful to differentiate poorly differentiated HCC in 3D analysis of ADC histograms.

P2-37.

¹⁸F-FDG-PET/CT 検査と生物学的特性の相関における口腔扁平上皮癌の悪性度と予後を検討する

(歯科口腔外科・矯正歯科)

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【目的】 口腔がん治療において、PET/CT 検査は病期診断、治療効果判定、再発転移診断に関して今や欠かすことのできない検査のひとつである。今回われわれは¹⁸F-FDG-PET/CT (以下 PET) の SUVmax 値と、口腔がんの進行度因子や生物学的特性および予後の相関について検討した。

【対象と方法】 2010年1月から2013年12月までの間に東京医科大学病院歯科口腔外科・矯正歯科を受診し、病理組織学的に扁平上皮癌と診断された、臨床的腫瘍径(長径)が1cm以上の新鮮例であった症例のうち、術前に同一施設でPET検査が施行され、初回治療として手術治療がなされた52例を対象とした。生物学的因子として組織学的グレード、

Ki67LI、その他進行度因子と SUVmax との関連性を検討した。

【結果】 SUVmax 値と臨床病理学的因子について student T 検定において検討したところ、cTstage、静脈侵襲、リンパ管侵襲、KI67、術後イベント群において有意な高値を示した。また SUVmax のカットオフ値を 8.0 として各因子との関連について χ^2 乗検定を行ったところ、cTstage、リンパ節転移、静脈侵襲、浸潤様式、KI67 で有意な関連を認めた。3 年全生存率に関しては有意差を認めなかったが、3 年無病生存率では SUVmax 高値群において有意に予後不良であった。

【結論】 PET から得られた様々なデータを用いて各因子と解析することにより、予後をはじめ、口腔がん治療における一助となりうる可能性が示唆された。

P2-38.

Predictive values of radiation pneumonitis by emphysematous lung evaluated by quantitative CT

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【Purpose】 To investigate whether patients with emphysema, defined by quantitative CT image measurement, had a risk factor of radiation pneumonitis (RP) when stereotactic body radiotherapy (SBRT) for non-small cell lung cancer (NSCLC) was performed.

【Methods】 Between March 2011 and June 2015, 68 consecutive patients with stage I NSCLC treated by SBRT dose of 75 Gy in 30 fractions were enrolled. The median age was 79 years old. The male to female ratio was 45 : 23 and tumor stage of T1 to T2 was 49 : 19. The severity of emphysema was evaluated by the percentages of the adequately determined lung volume near the tumor and the entire lung which had a low

attenuation area (LAA) of less than -860 HU and -950 HU. The LAA was calculated by the Synapse Vincent software. The level of radiation pneumonitis was assessed based on the common terminology criteria for adverse events version 4.0.

The frequency of radiation pneumonitis was determined by the Kaplan-Meier method. The Log Rank test was used to evaluate the frequency differences of RP associated with CT value. In multivariate analysis, the risk factors associated with RP were analyzed using the Cox proportional hazard model.

【Results】 During the median observation period of 18.1 months, 52 patients (76%) suffered from RP. Of these patients, 50 suffered from Grade 1 RP, one from Grade 2, one from Grade 3, and none had Grade 4. Emphysema level of more than 50% of LAA less than -860 HU in the volume near the tumor and the entire lung volume had significantly lower incidence of RP ($P=0.001$ and $P=0.004$). In multivariate analysis, the percentage of LAA of less than -860 HU in the volume near the tumor was the only significant risk factor for RP (Hazard ratio 0.35, 95% confidence interval 0.19 to 0.65, $P=0.001$). The location of the tumor, gender, the radiation dose or the T factor were not significant.

【Conclusion】 Patients with emphysema defined by quantitative CT evaluation were associated with a low risk of radiation pneumonitis after SBRT.

P2-39.

術前 CT による切除乳房と広背筋皮弁の採取量の評価を行う重要性と X 線造影系を用いた術前拡大広背筋皮弁体積の CT 解析と術前シュミレーションの重要性について

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【目的】 拡大広背筋皮弁を用いた乳房再建は有用な方法である。しかし皮弁採取量予測は客観性に欠けるため、切除乳房量に対して不足する場合や過剰採