Prediction of Sunitinib Efficacy using Computed Tomography in Patients with Pancreatic Neuroendocrine Tumors (CTpred-Sunitinib-panNET)

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Summary

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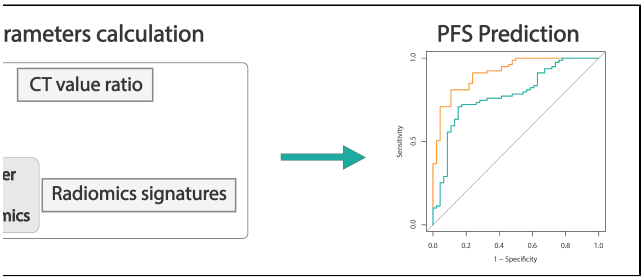

Clinically effective methods to predict the efficacy of sunitinib, for patients with metastatic or locally advanced pancreatic ne

Pretreatment CT images of 171 lesions from 38 patients with panNET were included. Clinical information including sex, age at diagnosis, progression-free survival of sunitnib treatment, ki-67 index, tumor grade and previous treatment before sunitinib were also collected. CT value ratio (CT value of tumor/CT value of abdominal aorta from the same patient) and radiomics features were extracted for model development. Receiver operating curve (ROC) with area under the curve (AUC) and decision curve analysis (DCA) were used to evaluate the proposed model.

Tumor shrinkage of >10% at first follow-up after sunitinib treatment was significantly associated with longer progression-free survival (PFS; P<0.001) and was used as the major treatment outcome. The CT value ratio could predict tumor shrinkage with AUC of 0.759 (95% confidence interval [CI], 0.685–0.833). We then developed a radiomics signature, which showed significantly higher AUC in training (0.915; 95% CI, 0.866–0.964) and validation (0.770; 95% CI, 0.584–0.956) sets than CT value ratio. DCA also confirmed the clinical utility of the model. Subgroup analysis showed that this radiomics signature had a high accuracy in predicting tumor shrinkage both for primary and metastatic tumors, and for treatment-naive and pretreated tumors. Survival analysis showed that radiomics signature correlated with PFS (P=0.020). The proposed radiomics-based model accurately predicted tumor shrinkage and PFS in patients with panNET receiving sunitinib and may help select patients suitable for sunitinib treatment.

Pancreatic neuroendocrine tumors is a rare group of tumor. The dataset can be used to validate the findings of our study. More importantly, researchers can use this dataset to study the imaging characteristics of pancreatic neuroendocrine tumors.

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Additional Resources for this Dataset

The NCI Cancer Research Data Commons (CRDC) provides access to additional data and a cloud-based data science infrastructure that connects data sets with analytics tools to allow users to share, integrate, analyze, and visualize cancer research data.

- Imaging Data Commons (IDC) (Imaging Data)

Detailed Description

Detailed Description

Image Statistics	Radiology Image Statistics
Modalities	CT
Number of Patients	38
Number of Studies	76
Number of Series	76
Number of Images	22,474
Images Size (GB)	11

Citations & Data Usage Policy

Citations & Data Usage Policy

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Chen, L., Wang, W., Jin, K., Yuan, B., Tan, H., Sun, J., Guo, Y., Luo, Y., Feng, S.-ting, Yu, X., Chen, M.-hu, & Chen, J. (2022). *Prediction of Sunitinib Efficacy using Computed Tomography in Patients with Pancreatic Neuroendocrine Tumors (CTpred-Sunitinib-panNET)* (Version 1) [Data set]. The Cancer Imaging Archive. https://doi.org/10.7937/SPGK-0P94

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TCIA Citation

Clark K, Vendt B, Smith K, Freymann J, Kirby J, Koppel P, Moore S, Phillips S, Maffitt D, Pringle M, Tarbox L, Prior F. **The Cancer Imaging Archive (TCIA): Maintaining and Operating a Public Information Repository**, Journal of Digital Imaging, Volume 26, Number 6, December, 2013, pp 1045-1057. DOI: 10.1007/s10278-013-9622-7

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