Supplementary

Appendix 1

Image acquisition

The following CT scanning instruments were used: Optima CT660, BrightSpeed CT, Revolution CT, and Discovery CT750HD (GE Medical System, Milwauke, WI) and Toshiba Aquilion 64-slice spiral CT. All patients underwent a CECT scan; the tube voltage was 120 kVp, the tube current was 200-350 mAs, the generated images were 5 mm thick, and some images were reconstructed with a 1.25 mm layer thickness. At a dose of 80 to 90 ml and a flow rate of 2.5 to 3.0 mL/s, iopromide injection (iodine concentration of 300 mg/mL) was used for enhanced scanning. Standard algorithms and high-resolution algorithms were used for image reconstruction and parallel multiplane reconstruction. The lung window (window width 1500 HU, window level -550 HU) and mediastinal window (window width 350 HU, window level 50 HU) were selected for image observation.

Disscussion about imaging features of METex14 skipping mutation in previous studies

Predicting gene mutations or expression levels (EGFR, ALK, KRAS, etc.) in lung cancer through conventional imaging features has been a hotspot in recent years, and some specific conventional image features can well indicate the gene mutation status (1-3). Thus far, two previous studies have explore the conventional CT features of *MET*ex14 skipping mutation in NSCLC patients (4,5). It is worth noting that Watari *et al.* (4) proposed that "presence of internal low-density areas" may be a special imaging feature to indicate *MET*ex14 skipping mutation. This is consistent with the results found in our research (mutations were found more frequently in those with pseudocapsular or annular enhancement). In a previous study, *MET*ex14 skipping mutations more easily appeared in the tissue of giant cells with nuclear pleomorphisms (6). Meanwhile, there are often giant cells with nuclear pleomorphisms in PSC, especially in pleomorphic carcinoma (a subtype of PSC), which is well known as the typical feature of "presence of internal low-density areas" (7). Digumarthy *et al.* (5) pointed out that the primary tumours in NSCLC with primary *MET*ex14 skipping mutation tended to present as solid, peripheral masses. These are also consistent with our findings. However, there were only a few PSC patients in the above two studies, so they could only provide insights. Our study evaluated more detailed conventional imaging features of patients with PSC. From the perspective of PSC, there has been no imaging study with such a large sample in previous studies. Our study also proposes that size and T stage are factors that can predict *MET*ex14 skipping mutation status in PSC patients. We speculate that the occurrence of *MET*ex14 skipping mutation at relatively early stages may be because early-stage tumours have more solid components, which is more conducive to the detection of mutations, and increased necrotic components as the disease progresses reduces the likelihood of mutation detection. Our study also summarized the conventional CECT features of PSC patients, which are helpful for the diagnosis of PSC.

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Table S1 CECT Characteristics for PSC

Features	Definition
Shape	The overall shape of roundness
0	Round or oval
1	Somewhat irregular
2	Irregular
Lobulation	A lobulated border was defined as a portion of a lesion's surface that showed a wavy or scalloped configuration
0	No
1	Yes
Margin	The margin of the tumor
0	Poorly defined
1	Well defined
Spiculation	Lines radiating from the margins of the tumor
0	None
1	Fine speculation
2	Coarse spiculation
Bubblelike lucency	The presence of air in the tumor at the time of diagnosis prior to biopsy or treatment
0	Absence of bubblelike lucency
1	Presence of bubblelike lucency
Cystic change or necrosis	An area with a CT value of less than 20 can be seen inside the tumor*
0	No
1	Yes
Obstructive change	Tumor compresses or obstructs the bronchus resulting in distal atelectasis or prominent patchy/streak shadow
0	No
1	Yes
Enhancement homogeneity	Homogeneity was defined as present when more than 90% of the area was occupied by the same attenuation value, as ascertained by visual inspection
0	Homogeneity
1	Heterogeneity
Pseudocapsule or annular enhancement	The internal density of the tumor is relatively low, and the other components show annular enhancement, like pseudocapsule
0	No
1	Yes
Overall CT value (HU)	Manually delineate the largest slice of the tumor and measure the CT value of the tumor
CT value of back muscle (HU)	Measure the CT value of the back muscle corresponding to the largest slice of the tumor
Enhancement relative ratio	Ratio = overall CT value (HU) / CT value of back muscle (HU)
Enhancement degree	Degree of enhancement on CECT images
0	Mild: enhancement degree less than that of the back muscles at the same level by at least 10 HU
1	Moderate: enhancement degree within 10 HU of that of the back muscles at the same level
Pleural attachment	Tumor attaches to the pleura other than fissure; tumor margin is obscured by the pleura
0	No
1	Yes
Pleural retraction	Retraction of the pleura toward the tumor
0	No
1	Yes
Pleural effusion	Pleural effusion can be seen in the thoracic cavity
0	No
1	Yes
Lymphadenopathy	Thoracic lymph nodes (hilar or mediastinal) with short-axis diameter greater than 1 cm
0	No
1	Yes
None calcification	There are not any patterns of calcification in the tumor
None air bronchogram	There are not any tubelike or branched air structures within the tumor
Solid texture	There are solid components in the tumor

CECT, contrast-enhanced computed tomography; PSC, pulmonary sarcomatoid carcinoma; CT, computed tomography; HU, Hounsfield unit.

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