Table 1. Diagnostic work-up of lung and thymic carcinoids

Clinical history
• Presence of functioning syndrome
• Presence of obstructive syndrome
• Family or personal history of MEN-1 syndrome
Pathology
• WHO 2015 classification *1 *2
• Multiple synchronous primaries; DIPNECH features
• Specification of node dissection (e.g. number, station)
• Resection status
Biochemistry
• Biochemical: K, Ca, glucose
• Chromogranin A[a]
• In syndromic patients: 24 h-urine-5-HIAA, serum cortisol, ACTH, 24 h-urine-free cortisol, serum GHRH, IGF-1[a]
Imaging
• TNM staging according to the 8th UICC edition: chest/abdomen CT with i.v. contrast (liver MRI)
• ^{68}Ga-DOTA SSA PET-CT or ^{111}In-DTPA scintigraphy if not available
• Consider FDG-PET-CT in AC or high-grade histopathology or negative SRI
• Whole spine, brain MRI if symptoms
• Bronchoscopy
• Transthoracic echocardiography if CS
• Tumour growth rate (radiological) over 2-3 months in non-resectable asymptomatic TC or low-grade AC
If considering surgery, carry out:
• Transthoracic echocardiography[b]
• Respiratory function tests
• Bronchoscopy
• Mediastinoscopy (or EBUS)[c]
Genetic screening
• MEN-1 germline testing when suspected

^{111}In, indium-111; 5-HIAA, 5-hydroxyindoleacetic acid; ^{68}Ga, gallium-68; AC, atypical carcinoid; ACTH, adrenocorticotropic hormone; Ca, calcium; CS, carcinoid syndrome; CT, computed tomography; CuS, Cushing's syndrome; DIPNECH, diffuse pulmonary neuroendocrine cell hyperplasia; DTPA, diethylene-triamine-pentaacetate; EBUS, endobronchial endoscopic ultrasonography; FDG, fluorodeoxyglucose; GHRH, growth hormone-releasing hormone; IGF-1, insulin-like growth factor 1; i.v., intravenous; K, potassium; MEN-1, multiple endocrine neoplasia type 1; MRI, magnetic resonance imaging; PET, positron emission tomography; SRI, somatostatin receptor imaging; SSA, somatostatin analogue; TC, typical carcinoid; TNM, tumour–node–metastasis; UICC, Union for International Cancer Control; WHO, World Health Organization.

[a] In case of clinical symptoms suggestive of CS or CuS or acromegaly. Absence of hypergastrinemia is a prerequisite for chromogranin A interpretation.

LLCG/VZN annotations

1. **The WHO classification for lung neuro-endocrine tumours (NETs) is determined on surgical specimens. In small biopsy specimens it is recommended to use the term carcinoid not otherwise specified.**
2. **Ki-67 (MIB 1) [IV, A], p53/RB1 [IV, B] biomarker analyses are recommended in selected cases for differential diagnosis between well and poorly differentiated NETs, especially in small samples.**