Role of High Definition (HD) Bronchoscopy in Histological Diagnosis of Lung Cancer According to Bronchial Vascular Patterns.

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دور منظار الرئة عالى الوضوح فى التشخيص الخلوى لسرطان الرئة طبقاً لأنماط الأوعية الدموية فى القصبات الهوائية.

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LIST OF ABBREVIATIONS

AAH: Atypical adenomatous hyperplasia
AC: Atypical carcinoid
AFB: Auto-fluorescence bronchoscopy
AFI: Autofluorescence Imaging
AIS: Adenocarcinoma in situ
ALK: Anaplastic lymphoma kinase
ASC: Adenosquamous carcinoma
ASD: angiogenic squamous dysplasia
ATS: American Thoracic Society
BAC: Bronchiolo alveolar carcinoma
CCD: Charged couple device
CE: Contrast enhancement
CEV: Cyclophosphamide, Epirubicin, and Vincristine
CIS: Carcinoma in-situ
CLE: Confocal laser endomicroscopy
CMOS: Complementary metal-oxide semiconductor
CT: Computer Tomography.
DFS: Disease-free survival
DICOM: Digital imaging and communications in medicine
DIPNECH: Diffuse idiopathic pulmonary neuroendocrine cell hyperplasia
EBUS: Endobronchial ultrasound
eCLE: Endoscope-based Confocal laser endomicroscopy
EdgeLG: Edge Locatable Guide
EGFR: Epidermal growth factor receptor
EM: Electron microscopy
ENB: Electromagnetic Navigation Bronchoscopy
EP: Etoposide and Cisplatin
ERS: European Respiratory Society
ES-SCLC: Extensive stage small-cell lung cancer
EWC: Extended working channel
FD-OCT: Fourier domain Optical Coherence Tomography
HD: High-definition
HDTV: High definition technology
HDWLE: High-definition white light endoscopy
HMB: High Magnification Bronchovideoscopy
IARC: International Agency for Research on Cancer.
IASLC: International Association for the Study of Lung Cancer
LG: Locatable Guide
IMA: Invasive mucinous adenocarcinoma
IP: Irinotecan plus Cisplatin

LCNEC: large cell neuroendocrine carcinoma
LIFE: light imaging fluorescence endoscope
LPA: lepidic predominant adenocarcinoma
LS-SCLC: Limited stage small-cell lung cancer
MET: Mesenchymal to epithelial transition
MIA: Minimally invasive adenocarcinoma
N/C ratio: nuclear/ cytoplasmic ratio
NBI: Narrow band imaging
NBI: Narrow Band Imaging
NCI: National Cancer Institute
NE: Neuroendocrine
NED: Neuroendocrine differentiation
NPV: Negative predictive value
NSCLC: Non-small cell lung cancer
NSCLC-NOS: Non-small-cell lung cancer-not otherwise specified
OCT: Optical Coherence Tomography
PCI: Prophylactic cranial irradiation
pCLE: Probe-based Confocal laser endomicroscopy
PDT: photodynamic therapy
PIU: Probe interface unit
PNs: Peripheral nodules
PPV: Positive predictive value
QOL: Quality of life
ROSE: Rapid on-site evaluation
SAFE: System of autofluorescence endoscopy
SCC: Squamous cell carcinoma
SCLC: Small-cell lung cancer
SD: Standard definition
SE: Surface enhancement
SEER: Surveillance, Epidemiology, and End Results
TBNA: transbronchial needle aspiration
TC: Typical carcinoid
TD-OCT: Time-domain Optical Coherence Tomography
TE: Tone enhancement
TKIs: Tyrosine kinase inhibitors
TNM: Tumor, Node, Metastases
TP: Topotecan plus Cisplatin
TTF-1: Thyroid transcription factor-1
VA: Veterans Administration
VIA: Variants of invasive adenocarcinomas
WHO: World Health Organization
WLB: white light bronchoscopy

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Abstract

Key Words: high definition bronchoscopy, HD endoscopy, I-Scan.

HD bronchoscopy, which provides substantially higher resolution images than conventional WLB and produce signal images with resolutions that range from 850,000 pixels to more than 1 million pixels. I-Scan technology is a software-driven technology that allows modifications of sharpness, hue, and contrast to enhance view of the texture of the mucosal surface and blood vessels.

HD bronchoscopy with I-Scan has a significant role in pathological diagnosis of lung cancer according to vascular patterns, as tortuous vessels mostly related to squamous cell carcinoma and dotted vessels mostly related to Adenocarcinoma.

Demogarphic and Clinical presentation

No.	Age	Sex	Occupation	Smoking	Family history of lung cancer	Main complain
1	55	M	Employee	Yes	No	Cough
2	67	M	Employee	No	No	Cough
3	59	M	Employee	No	Yes	Hemoptysis
4	64	F	Employee	No	No	Cough
5	61	M	Farmer	Yes	Yes	Hemoptysis
6	70	M	Employee	Yes	No	Hemoptysis
7	53	F	Teacher	Yes	Yes	chest pain
8	60	M	Worker	No	Yes	chest pain
9	65	M	Employee	Yes	No	Cough
10	45	M	Worker	Yes	No	Hemoptysis
11	53	F	House wife	Yes	No	chest pain
12	55	M	Employee	No	Yes	Cough
13	61	F	House wife	No	No	Hoarseness
14	49	M	Employee	Yes	Yes	Hemoptysis
15	55	M	Worker	No	No	Cough
16	63	F	House wife	Yes	Yes	Hoarseness
17	64	M	Farmer	Yes	No	Cough
18	73	M	Worker	Yes	No	Hemoptysis
19	59	F	Employee	Yes	No	Hoarseness
20	65	M	Farmer	No	No	Cough
21	48	M	Employee	No	No	Hemoptysis
22	62	M	Employee	Yes	No	SOB
23	56	M	Worker	Yes	Yes	Cough
24	67	M	Employee	Yes	Yes	SOB
25	68	M	Teacher	Yes	Yes	Cough
26	57	M	Employee	Yes	No	SOB
27	64	M	Employee	Yes	No	Hemoptysis
28	66	M	Employee	No	No	chest pain
29	73	M	Teacher	Yes	No	Cough
30	70	M	Employee	Yes	Yes	SOB

HRCT and Lab Investigations

No.	HRCT findings	Site	Laboratory investigations			
			INR	SGOT (U/L)	Creatinine (mg/dl)	Hb (g/dl)
1	Mass	Rt	1.5	22	0.6	13.3
2	Consolidation	Lt	1.3	10	0.9	14
3	Mass	Rt	1.4	13	1.3	15.2
4	Consolidation	Rt	1.5	15	1.2	16.2
5	Mass	Rt	1.2	22	1.4	14.5
6	Mass	Lt	1.2	40	0.9	13.5
7	Effusion	Rt	1.3	33	0.7	15.2
8	Effusion	Lt	1.1	12	0.5	14.2
9	Consolidation	Rt	1.4	18	0.3	13.9
10	Mass	Rt	1.5	26	1.1	15.5
11	Consolidation	Rt	1.3	27	1.2	16.2
12	Consolidation	Rt	0.9	29	0.4	14
13	Mass	Rt	1.4	31	0.6	13.8
14	Mass	Lt	0.8	17	0.7	15.3
15	Consolidation	Rt	1.3	13	1.4	13.1
16	Collapse	Rt	1.4	15	1.2	12.8
17	Effusion	Lt	1.5	17	1.4	12.1
18	Mass	Lt	0.9	37	1.6	14.3
19	Collapse	Rt	1.3	23	1.1.	13.5
20	Combinations	Rt	1.4	20	1.3	14.5
21	Mass	Rt	1.5	21	1.2	14.5
22	Effusion	Rt	1.3	29	0.3	13.6
23	Combinations	Lt	1.5	14	0.9	14.7
24	Mass	Lt	1.6	25	1.4	15
25	Collapse	Rt	1.2	32	1.3	14.2
26	Mass	Rt	1.1	19	1.2	13.5
27	Combinations	Rt	1.3	18	1.3	15.5
28	Consolidation	Lt	1.3	22	1.2	13.9
29	Combinations	Lt	1.2	35	1.1	14.1
30	Mass	Rt	1.5	26	0.7	13.6