Preliminary data on cryobiopsy performed with ultrathin bronchoscopy in the diagnosis of peripheral lung lesions suspected of malignancy

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The management of non-small cell lung cancer (NSCLC) has become increasingly complex due to the evolution of personalized medicine approaches. The attachment of a flexible cryoprobe to bronchoscopes is already know (1996). Since the latter half of the 20th century, cryobiopsy (CB) has been used as a recent technique for the diagnosis of both endobronchial and peripheral lung tumors.
In comparison with conventional forceps biopsy, studies report a higher diagnostic rate and a superior quality of the collected samples for both the histopathological and the molecular diagnosis of lung cancer.

This are preliminary data of 13 patients with suspected peripheral lung cancer who underwent CB with UT (ultra thin, 1.1 mm) at our endoscopy centre UT (March-December 2021). Of these 13 patients (mean age 74.6 years; range 65-91 years), 3 were female; 2 of them were active smokers (15.3%), 3 stopped smoking (23.1%), 3 never smoked (23.1%). For the 5 remaining (38.5%) no medical history was available. 7 patients had a clinical oncological history. Before bronchoscopy, all patients were studied with contrast-enhanced chest CT, and 4 also with global body PET. 4 were characterized as pulmonary opacities (30.7%), while of the remaining peripheral lesions 3 were masses (23.1%) and 6 were nodules (46.2%).

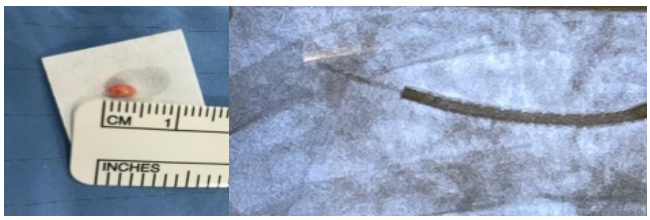
characteristics of the patients who underwent cryobiopsy of suspect lung cancer within our Institution

	Smoke	Sex (M 1/F 0)	Age	Exam area	Diagnosis	Fluoroscopy	Bleeding	PNX
1	YES	0	83	B6 L	ADK	Yes	Mild	NO
2	NC	1	74	B3 R	ADK	Yes	NO	NO
2	EX	1	83	B3 R	OP	Yes	NO	NO
4	YES	1	74	B3 R	Negative	Yes	NO	NO
5	EX	1	70	B4, B5 L	Low grade Mucoepidermoid carcinoma	Yes	NO	NO
6	NO	0	78	LMB VEGETANT	Non small cell carcinoma not otherwise specified	Yes	NO	NO
7	NO	0	91	SUBSEGMENTARY RULB	ADK	Yes	NO	NO
8	NC	1	68	B1, B2 L	Squamous cell carcinoma	Yes	NO	NO
9	NC	1	65	B8 R VEGETANT	Carcinoid	Yes	NO	NO
10	NC	1	55	B1, B2 L	ADK	Yes	NO	NO
11	EX	1	78	B4, B5 L	B marginal NHL	Yes	NO	Yes
12	NC	1	78	RULB	Negative	Yes	NO	NO
13	NO	1	78	B8 R	Neuroendocrine neoplasm	Yes	NO	NO

Immunohistochemical analysis

	PD-L1 (%) Expression	Other biochemistryVsample availability	ALK, ROS1, MET, RET, NTRK1, NTRK2, NTRK3	EGFR, k-ras, N-ras, braf, other	braf, nras,KIT	Other
1	1-5%	Negative	NT	Eson 2 codon 12 mutated c.34G>T, p (gly12cys), codon 13 non mutated	NT	NTRK1-2-3 nn traslocated
2	Surgery	Surgery	Surgery	Surgery	Surgery	Surgery
3	NT	NT	NT	NT	NT	NT
4	NT	NT	NT	NT	NT	NT
5	<1%	Y	ros1 met ret non traslocato	EGFR eson 19 mutated, K-ras e braf not mutated	NT	NTRK1.2.3 non traslocato
6	70-75%	Y	Negative	k-ras: eson 2: codon 12, mutated, c.35G>A, p.(Gly12Asp)	NT	K-RAS: eson 2, codon 12, mutated, c.35G>A, p.(Gly12Asp), Expression of CAM5.2, MNF-116 e AE1/AE3 (partial); focal expression of Citocheratine 7; not expressed Citocheratine 20 and TTF-1, Napsin-A, p40, CEA; likely focal weak expression of Calretinina
7	TPS>50%	Y	Negative	EGFR eson 19 mutated.	NT	NT
8	NT	NT	NT	NT	NT	NT
9	NT	NT	NT	NT	NT	NT
10	Low expression	Other		EGFR eson 19 mutated, K-ras e braf not mutated	Met non mutated	EGFR eson 19 mutated
11	NT	NT	NT	NT	NT	NT
12	NT	NT	NT	NT	NT	NT
13	NT	NT	NT	NT	NT	NT

The diagnostic yield of CB was 84,6% with histological diagnosis. 9 patients were diagnosed with lung cancer (adenocarcinoma: 4; squamous-cell carcinoma: 1; NSCLC-not other specified: 1; mucoepidermoid carcinoma: 1; carcinoid: 1; neuroendocrine neoplasm). One patient was diagnosed with non-Hodgkin lymphoma and one patient with organized pneumonia and two patients' samples were not diagnostic. Pneumothorax occurred in only one case, and only one patient had mild bleeding. In adenocarcinoma samples immunohistochemical analysis was performed.



Conclusions: CB in association with UT allows collection of large and nearly intact tissue samples, improving the diagnostic rate, facilitating the measurement of multiple biomarkers and making histologic diagnosis quicker (4). Patient enrolment is ongoing during this new year.

Reference:
1 Transbronchial lung cryobiopsy for the diagnosis of interstitial lung diseases (2022)
2.Diagnostic value of ultrathin bronchoscopy in peripheral pulmonary lesions: a narrative review (2020)
3.Cryobiopsy: Should This Be Used in Place of Endobronchial Forceps Biopsies? (2013)
4. Novel Emerging Molecular Targets in Non-Small Cell Lung Cancer (2021)
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