



Epidermal Growth Factor Receptor Mutation in Patients with Non-Small Cell Lung Carcinoma in Fundación Valle del Lili, a University Hospital of Reference in Latin America

Liliana Fernández T. MD.¹, Luz Fernanda Sua V. MD. PhD.², Lisa Ximena Rodriguez MD. PhD.², Carlos Andres Muñoz MD.³, Mauricio Velásquez MD.⁴, Juan Guillermo Restrepo MD.⁵

¹Interventional Pulmonology, ²Department of Pathology and Laboratory Medicine, ³Medical Research, ⁴Thoracic Surgery, ⁵Clinical Oncology. Biomedical Research Group in Thorax, Fundación Valle del Lili. Universidad Icesi. Cali, Colombia

Introduction

Epidermal Growth Factor Receptor (EGFR) exon 19-deletion and exon 21 L858R mutation is found in 10% of Non-Small Cell Lung Carcinoma (NSCLC) in Caucasians and in 20 to 40% in Asians. The use of Tyrosine Kinase Inhibitors (TKI) in these genetic alterations has demonstrated a greater response and progression free survival in 9-15 months. Objective: To describe the experience in EGFR identification in Fundación Valle del Lili (FVL).

Results

98 samples were analyzed. Amplified DNA was obtained in 97% (95) of the cases. The mean age was 65,4±12 years, 63,2% (60) females and 36,8% (35) males. The mutation was observed in 25% (24), exon 19 in 10,5% and exon 21 in 14,7%. 83,1% of the tumors were adenocarcinomas, 70,5% in stage IV and 29% of the cases with a mutation was receiving TKI. Mortality was 14,7% (Table 1).

Methods

Between June/2013 and Sep/2015, 95 samples were analyzed. A microdissection of tumor areas was performed as well as DNA extraction with QIAamp FFPE Kit(Qiagen®) and amplification of exons 18, 19, 20 and 21 by PCR. It was visualized through microfluidic electrophoresis with Agilent Bioanalyzer® System.

Conclusions

EGFR gene mutations are present in 25% of the population, similar to Asian population. Due to the effectiveness of TKI in patients with NSCLC and EGFR mutation, it is recommended to study the mutation in the greatest number of patients, in advanced stages, non smokers and with adenocarcinoma histology.

Table 1. Lung cancer patient characteristics

Population Characteristics	Total = 95 n (%)	With the mutation n (%)	Without the mutation n (%)
Age $\bar{x} \pm SD$, years	65,4±12	63,5±14	66±12
Gender			
Female	60 (63,2)	17 (28,3)	43 (71,7)
Male	35 (36,8)	7 (20)	28 (80)
Total	95 (100)	24 (25,3)	71 (74,7)
Sample collection technique			
EBUS	3 (3,2)	0 (0)	3 (100)
FBO	36 (37,9)	6 (16,7)	30 (83,3)
CT-guided puncture	6 (6,3)	2 (33,3)	4 (66,7)
Thoracoscopic biopsy	48 (50,5)	15 (31,2)	33 (68,8)
Thoracentesis	2 (2,1)	1 (50)	1 (50)
Diagnosis			
Adenocarcinoma	79 (83,1)	20 (25,3)	59 (74,7)
Squamous cell tumor	5 (5,2)	0 (0)	5 (100)
Large tumor cells	6 (6,3)	1 (16,7)	5 (83,3)
Adenosquamous tumor cells	4 (4,3)	2 (50)	2 (50)
Giant Cell Carcinoma	1 (1,1)	1 (100)	0 (0)
Tumor stages			
IA	3 (3,2)	1 (33,3)	2 (66,7)
IB	3 (3,2)	2 (66,7)	1 (33,3)
IIA	1 (1,1)	0 (0)	1 (100)
IIB	6 (6,3)	1 (16,7)	5 (83,3)
IIIA	5 (5,2)	3 (60)	2 (40)
IIIB	10 (10,5)	3 (30)	7 (70)
IV	67 (70,5)	14 (20,9)	53 (79,1)
Exons evaluated			
Exon 19	95 (100)	10 (10,5)	85 (89,5)
Exon 21	95 (100)	14 (14,7)	81 (85,3)
Treatments*			
Palliative treatment	30 (31,6)	6 (20)	24 (80)
Chemotherapy	53 (55,8)	11 (20,8)	42 (79,2)
Tyrosine kinase inhibitor	11 (11,6)	7 (63,6)	4 (36,4)
Radiotherapy	11 (11,6)	2 (18,2)	9 (81,8)
Observation	6 (6,3)	3 (50)	3 (50)
Anti-PD-1	1 (1,1)	0 (0)	1 (100)
Survival			
Mortality	14 (14,7)	4 (28,6)	10 (71,4)
Survivors	56 (59)	17 (30,4)	39 (69,6)
No data	25 (26,3)	3 (12)	22 (88)

* A patient may have had more than one treatment

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investigacionbiomedicaentorax@gmail.com

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