

## INTERVENTION OF ALPHA DORNASE (PULMOYZME) ON IMPROVEMENT OF RESPIRATORY PARAMETERS IN CYSTIC FIBROSIS

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### Abstract

In cystic fibrosis (CF), respiratory disease has leading role on disease's progression (1,7). Two aspect are very important in management of respiratory disease (4,8,9) – infection control and improvement of pulmonary secretion clearance (IPSC). Aerosol therapy include: anti-inflammatory medication, bronchodilators, antibiotics and mucolytic drugs. About mucolytic drugs, there are two means - with N-acetylcysteine and alpha dornase (Pulmozyme).

**Key words:** cystic fibrosis, infection control, pulmonary secretion clearance, aerosol therapy.

### Study background

In cystic fibrosis (CF), respiratory disease has leading role on disease's progression (1,7). From this point of view, two aspect are very important in management of respiratory disease (4,8,9) – infection control and improvement of pulmonary secretion clearance (IPSC). IPSC could be achieved through clearance technique (CT) and aerosols therapy (AT). Aerosol therapy include: anti-inflammatory medication, bronchodilators, antibiotics and mucolytic drugs. In fact, mucolytic drugs and CT signify one of the most important share of management in CF (9).

About mucolytic drugs, there are two means - with N-acetylcysteine and alpha dornase (Pulmozyme). N-acetylcysteine is a classical mucolytic agent. Opinions are different about efficacy (2,3,5). Alfa dornase is a new mucolytic agent, already with a large usefully. During the immunological local conflict from bronchial tree, is delivered a huge leukocyte DNA. Leukocyte DNA increase the thick of bronchial secretions. Alfa dornase cleavage the leukocyte DNA and clearance the sputum (6). However, there are any controversys about relation price/efficiency (3).

### Aim study

The aim study is to compare the respiratory parameters of alpha dornase therapy versus acetylcysteine.

### Study group and methods

• We performed two homegenous groups, each group formed by 6 patients with chronic pulmonary infection (3 with *Staph. aureus* and 3 with *Pseudomonas aeruginosa*). The including criterions:

- pulmonary stable condition
- aged over 12 years
- FEV1  $\geq$  45%
- FVC  $\geq$  50%
- Whithout mixed infection

• First evaluation was performed after 2 month and second evaluation after 6 month.

• All patients followed the same physiotherapy programme

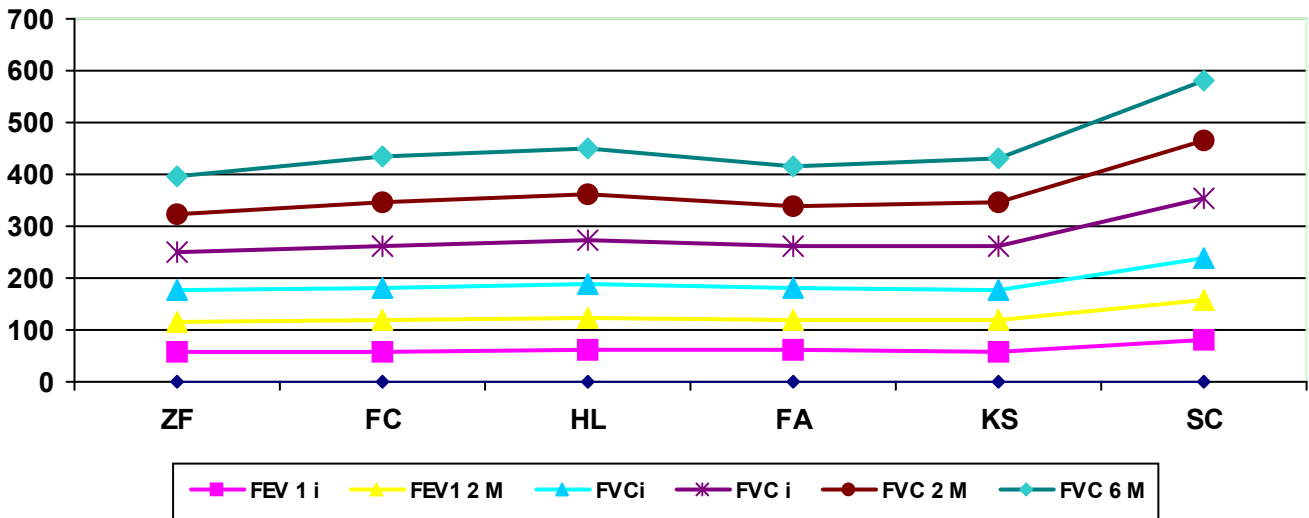
• Aerosols therapy consist of N-acetylcysteina (group 1) and alpha dornase (group 2) through jet nebuliser (Pary Boy device).

### Results

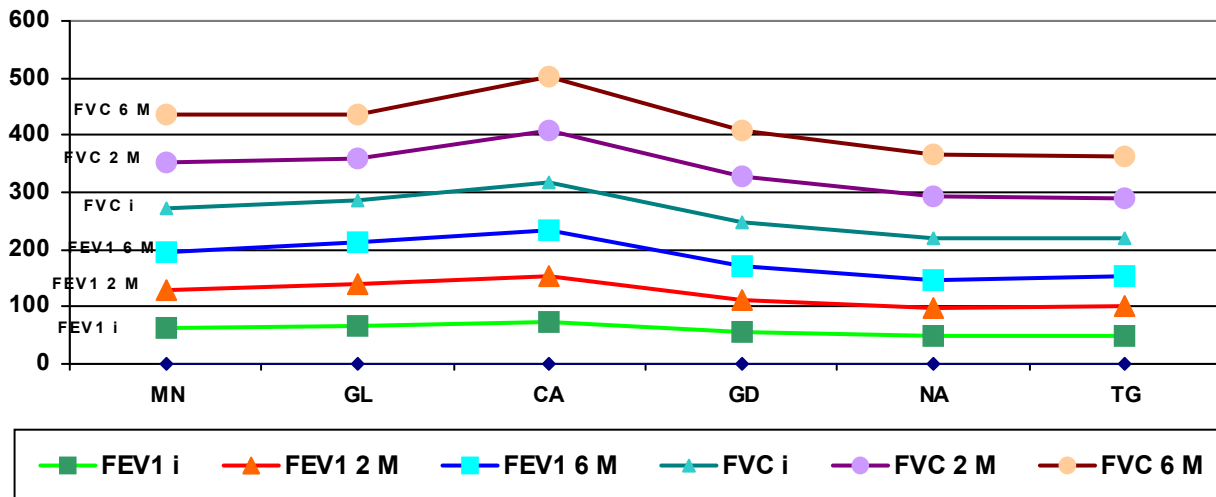
• At group 1 (N-acetylcysteina) increase of respiratory parameters was more significant during the first 2 month, with subsequent slowly increase afterwards. Values final were: FEV1 increse with 2,08% and FVC increse with 2,13 % (Fig.1)

• At group 2 (alpha dornase) respiratory parameters increse al 2 mouth with 4,8% (FEV1), respectively 4,1% (CFV). At 6 mouth FEV1 increased with 6,1% and CFV with 5,85% (Fig. 2). Answer to therapy was quit similar in patients infected with *Staf. aureus*, comparing to *Pseudomonas aeruginosa*

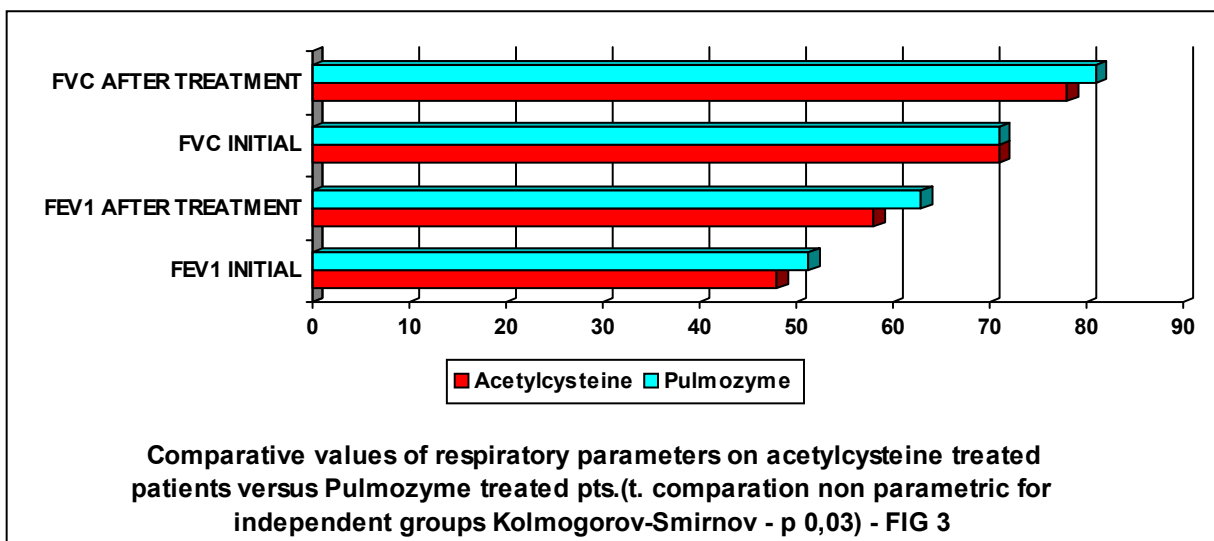
• The comparative values of respiratory parameters at the two groups (non parametric test for independent groups – Kolmogorov-Smirnov) showed a semnificative corelation (p 0,03)(Fig. 3).



Evolution of respiratory parameters -acetylcysteine aerosols (Fig 1)



Evolution of respiratory parameters - Pulmozyme aerosols (Fig. 2)



### Conclusions

Alpha dornase aerosols therapy is distinctly superior to acetylcysteine aerosol treatment.

Efficiency is more imply as is early set up, enviable before the occurrence of respiratory infection.

It must be correlated with physiotherapy clearance techniques.

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