

P7 EFFICACY OF HIGH FREQUENCY CHEST COMPRESSION (HFCC) IN THE CLEARANCE OF MUCUS IN PATIENTS WITH CYSTIC FIBROSIS (CF)

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Aims: To determinate the efficacy of HFCC (using the VEST) in the clearance of mucus, by comparing it to the amount of expectorated mucus obtained with PEP-mask. HFCC is made through a system with an inflatable vest, that rapidly inflates and deflates to compress and release the chest wall, creating an airflow inside the lungs. This process moves mucus towards the larger airways, where it can be coughed up and expectorated. PEP-mask is a positive expiratory pressure generated through a face-mask.

Methods: 10 CF patients (M:W=8:2; mean age=24.3 yrs, range=9–43 yrs), clinically stable and undergoing their usual therapies (mean FEV1=54.79%, range=26–93), were randomly recruited. They came twice a week in a 2 weeks period to perform both VEST and PEP-mask therapy each week (1st day VEST, 2nd day PEP, 3rd day PEP, 4th day VEST). %SaO₂ and cardiac frequency were checked with pulseoximeter every 2 min during each session. We evaluated the emotional state and the fatiguing using VAS scales, before and after each treatment. The dry expectoration was weighted in laboratory. HFCC consisted on a VEST treatment of 30 min with 3 phases: the first consisted of 7 min in a low frequency (8 Hz) and pressure (P = 4), the second consisted of 7 min at 10 Hz and P = 5, and the third of 7 min at 15 Hz and P = 6. Every phase was followed by a pause of 3 min where they did 3 cough bouts and expectorated. They did a total of 9 cough bouts followed by expectorations. PEP-mask consisted of a 30 min treatment. Patients did 7 min of PEP (with a pause of 20 sec every 2 min) followed by a pause of 3 min where they did 3 cough bouts and expectorated for 3 times. They did a total of 9 cough bouts followed by expectorations.

Results: See the table. VEST PEP-mask P value Sputum gr 34.09±10.28 34.91±9.84 0.483 % SaO₂ mean 95.18±1.79 95.49±1.38 0.293 Peak %SaO₂ desat 91.90±3.29 91.30±3.05 0.441 % pz VAS amusing 30 10 % pz VAS fatiguing 45 45

Conclusions: VEST is as much effective as PEP-mask technique in clearing sputum from airways of CF patients. No differences neither in the amount of sputum expectorated nor in peak SaO₂% desaturation were showed. VEST was perceived as less distressing than PEP-mask, in the same fatiguing condition. So the VEST may be used as substitute or integrative to PEP, to create an alternative to the classic chest physical therapy.

Reference(s) JC Darbee, JF Kanga, Physiologic evidence for HFCWO and positive expiratory pressure breathing in hospitalized subjects with cystic fibrosis. *Physical Therapy*, Vol. 85(12), 2005, 1278–1289