Cochrane Database of Systematic Reviews - - Cochrane Review

Active cycle of breathing technique for cystic fibrosis

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Study design (if review, criteria of inclusion for studies)

Randomised or quasi-randomised controlled clinical studies, including crossover studies, comparing ACBT with other airway clearance therapies in CF.

List of included studies (22)

Bilton 1992; Chatham 2004; Fauroux 1999; Hofmeyr 1986; Holland 2003; Howard 2000; Kofler 1994; Miller 1995; Milne 2004; Mortensen 1991; Osman 2008; Phillips 2004; Pike 1999; Pryor 1979; Pryor 1994; Pryor 2010; Reisman 1988; Steven 1992; Webber 1985

Participants

Individuals with CF diagnosed based on clinical criteria, sweat testing or genotype analysis.

Interventions

ACBT

Outcome measures

FEV1%; FVC %; Pulmonary exacerbation; Sputum weight

Main results

The searches identified 74 trials, of which 19 (2565 participants) met our inclusion criteria. 15 trials compared dornase alfa to placebo or no dornase alfa (2447 participants); two compared daily dornase to hypertonic saline (32 participants); one compared daily dornase alfa to hypertonic saline and alternate day dornase alfa (48 participants); one compared dornase alfa to mannitol and the combination of both drugs (38 participants). Trial duration varied from six days to three years. - Dornase alfa compared to placebo or no treatment. - Dornase alfa probably improved forced expiratory volume at one second (FEV1) at one month (four trials, 248 participants), three months (one trial, 320 participants; moderateâ€•quality evidence), six months (one trial, 647 participants; highâ€•quality evidence) and two years (one trial, 410 participants). Limited lowâ€•quality evidence showed treatment may make little or no difference in quality of life. Dornase alfa probably reduced the number of pulmonary exacerbations in trials of up to two years (moderateâ€•quality evidence). One trial that examined the cost of care, including the cost of dornase alfa, found that the cost savings from dornase alfa offset 18% to 38% of the medication costs. - Dornase alfa: daily versus alternate day. - One crossâ€•over trial (43 children) found little or no difference between treatment regimens for lung function, quality of life or pulmonary exacerbations (lowâ€•quality evidence). - Dornase alfa compared to other medications that improve airway clearance. - Results for these comparisons were mixed. One trial (43 children) showed dornase alfa may lead to a greater improvement in FEV1 compared to hypertonic saline (lowâ€•quality evidence), and one trial (23 participants) reported little or no differences in lung function between dornase alfa and mannitol or dornase alfa and dornase alfa plus mannitol (lowâ€•quality evidence). One trial (23 participants) found dornase alfa may improve quality of life compared to dornase alfa plus mannitol (lowâ€•quality evidence); other comparisons found little or no difference in this outcome (lowâ€•quality evidence). No trials in any comparison reported any difference between groups in the number of pulmonary exacerbations (lowâ€•quality evidence). - When all comparisons are assessed, dornase alfa did not cause significantly more adverse effects than other treatments, except voice alteration and rash.

Authors' conclusions

There is evidence to show that, compared with placebo, therapy with dornase alfa may improve lung function in people with cystic fibrosis in trials lasting from one month to two years. There was a decrease in pulmonary exacerbations in trials of six months or longer, probably due to treatment. Voice alteration and rash appear to be the only adverse events reported with increased frequency in randomised controlled trials. There is not enough evidence to firmly conclude if dornase alfa is superior to other hyperosmolar agents in improving lung function.

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See also

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Keywords

Airway clearance technique; Chest Wall Oscillation; Drainage; High Frequency Chest Wall Oscillation -HFCWO-; non pharmacological intervention - devices OR physiotherapy; pharmacological_intervention; Active Cycle of Breathing Technique -ACBT-; forced expiration technique; Chest physiotherapy; Postural Drainage; Percussion; Positive-Pressure Respiration- PEP- pep mask; VEST Airway Clearance System; oscillating devices; Acapella; flutter; Intrapulmonary Percussive Ventilation; Vibration; Autogenic drainage;