290° Pelvic floor muscle training in adolescent females with cystic fibrosis

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Background: Chronic coughing in adolescent females with cystic fibrosis (CF) can lead to an increased incidence of urinary stress incontinence (USI). Pelvic floor (PF) muscle strengthening reduces symptoms of USI, but little is known about teaching PF strengthening in paediatrics. PF exercises can be difficult to perform correctly with verbal education alone. Trans-abdominal real time ultrasound (RTUS) is useful in adults as a non-invasive way of ensuring correct technique by visualisation of PF muscle displacement.

Methods: Ten females aged 12 to 18 with CF were recruited. A questionnaire determined their continence status, knowledge and current practice of pelvic floor exercises (PFX). Subjects received verbal training in PFX followed by RTUS visual feedback training.

Results: Six of the ten subjects had heard of PFX prior to the study, two had been taught PFX verbally, but no one performed them regularly. After verbal education alone, all subjects felt they could perform a PF contraction but only 60% were able to demonstrate the correct technique as identified using RTUS. After training with RTUS, 100% were able to perform a PFX correctly and repeat the technique in the immediate period without visual feedback. On subsequent visits all felt they could perform the correct technique prior to RTUS assessment, but 30% of subjects required more than 1 visit to consistently perform PFX elevations. By 3 visits, nine of the ten subjects correctly performed the technique without visual biofeedback.

Conclusion: RTUS was an effective tool when teaching PFX. Most adolescent females with CF in this sample learned to perform an effective PFX within two practise sessions with RTUS biofeedback. No subjects reported embarrassment and all felt it would be useful to incorporate into CF clinic visits in early adolescence.

Reference(s)

291° Only a few osteoporotic adult CF patients and no vertebral fractures

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Recent studies within the adult CF populations have shown a high prevalence of osteoporosis and vertebral fractures, complications deemed to increase with increasing age. The cause of the osteoporosis is not yet clear; malnutrition, low levels of specific vitamins and minerals, lack of physical exercise or a combination of all these factors. The Lund CF centre physiotherapy approach was totally changed 25 years ago when all passive treatment was left behind. Since then individually tailored, frequently optimized weight bearing physical exercises as well as chest mobility and postural muscle strengthening exercises have been included in the basic treatment regimen.

The aim of this study was to summarize the prevalence of osteoporosis and fractures within the adult CF population at Lund CF centre.

Method: All patients carry out a BMD measurement every 5th year. Data from their latest BMD measurement and parallel BMI were collected from medical records. Data on fractures during their whole life time was collected by interview. BMD is measured by the DEXA method, with the help of GE Health Care Lunar Prodigy. T-score for L1-L4 and Hip were available for all patients. The classification following WHO standards was based on the poorest of the L1-L4 and Hip T-score.

Results: All the 68 non-lung transplanted adult CF patients were included. Mean age was 30 ±9, mean BMI 21±2.8. Of all the patients 37 (54%) were classified as having normal BMD, 28 (41%) osteopenia and 3 (4%) osteoporosis. Among the 68 patients three rib fractures were found in two individuals, no vertebral fractures have been seen.

Conclusion: The good results shown in this study are probably due to the combination of adequate nutritional care and the application of physical exercise as a major part of the physiotherapy since 25 years.

292° Developing a musculoskeletal service for adults with cystic fibrosis

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Background: Following surveys of our reactive care of musculoskeletal (MSK) problems and patients’ concerns about their posture [1,2] in 2004 we offered a proactive service. At annual review patients were asked about MSK problems and postural concerns. This did not include a MSK assessment by a physiotherapist.

Aims: To identify the patients with reported MSK problems, determine the subsequent management and time to intervention.

Methods: The notes of annual assessments and MSK notes for inpatient and outpatient visits were reviewed for the year 2005.

Results: Physiotherapy annuals were completed for 158/236 (67%) patients. 83/158 (53%) had MSK problems identified. 55/83 (67%) received no intervention. Of the 28 who received treatment 20 (71%) were assessed in under 6 weeks. Treatment was provided by a CF physiotherapist but the time for MSK care was not prioritized nor protected.

Conclusions: We identified that just over half our adult patients reported MSK problems but we have insufficient resources to evaluate and treat their MSK complaints.

Assessment and treatment should be provided as soon as problems occur.

Future developments: The CF physiotherapy team now includes a physiotherapist with a MSK interest with protected time for assessment and treatment of the problems and an advanced practitioner to give strategic direction for development of the service. Protocols and standardized outcome measure-based assessments are to be put in place, including lines of communication and training with orthopaedic consultants and physiotherapists for onward referral. The issue of routine MSK and postural assessment will need to be addressed. The service will be re-audited following implementation.

Aim: Evaluation of exercise capacity in CF children and comparison with reference values for healthy peers.

Method: 68 children performed, on an annual basis, exercise capacity testing (Leger shuttle run, expressed in stage reached), hand grip force (HGF) (Jamar handheld dynamometer), isometric quadriceps force (QF) (Microfet) and lung function tests (FEV1, FVC %pred).

Results: 38 boys and 30 girls participated, age at testing ranging from 7–16 years. Number of tests performed per child: 5 tests (n=9), 4 (n=21), 3 (n=12), 2 (n=15), 1 (n=11). For all age groups, mean FEV1 was >80%pred. and mean FVC >90%pred. Mean Leger scores, for each age group, was at or above the 25th percentile. A significant correlation was found between exercise capacity and FEV1 as well as FVC (r=0.32 and 0.36 respectively).

Mean peripheral muscle force (both HGF and QF) were below the 50th percentile in each age group. Mean HGF was lower than QF (P3 vs P25), this was more pronounced in early puberty. Mean Leger scores remained stable over time, however both HGF and QF decreased with older age (r=−0.25; r=−0.23).

FVC correlated with peripheral muscle force (HF r=0.21 and QF r=0.22). FEV1 correlated with HGF (r=0.20).

Conclusion: Results show that, over a 5-year period, exercise capacity and peripheral muscle force in a group of CF children were low but within the normal range of healthy peers. Over the five year period, muscle force decreased whilst Leger and lung function remained relatively stable. Further investigations should look at the relationship between exercise capacity and nutritional parameters.