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Title **Is Hydrotherapy Cost Effective? The Costs and Outcomes of Hydrotherapy Programs Compared with Physiotherapy Land Techniques in Children with Juvenile Idiopathic Arthritis**

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Aim

1. To compare the effects of *combined* hydrotherapy and land physiotherapy with *land* physiotherapy alone on cost, quality of life, and disease outcome in children with juvenile idiopathic arthritis (JIA).
2. To determine the cost effectiveness of combined hydrotherapy and land physiotherapy in JIA.

Conclusions and results

Primary outcomes: Seventy-eight patients were recruited to the trial and received treatment. Two months after intervention, 47% in the *combined* group and 61% in the *land* group had improved, and 11% and 5% respectively had become worse. The difference in proportions of patients that improved in the 2 arms, with continuity correction for observed differences, was -0.11 (95% CI -0.34, 0.12). The central estimate suggests that 11% more patients benefit under land treatment. Cost-effectiveness analysis showed no significant differences in mean costs and QALYs between the two groups. The combined group had slightly lower mean costs and lower mean QALYs. Small sample size and degree of disease severity were limitations in the trial. Recruitment did not reach the original target since patients at the severe end of the disease spectrum were excluded as their management was not constant, a pharmaceutical intervention trial with similar entry criteria was run simultaneously in JIA, and some children and their parents did not want hydrotherapy withdrawn. Hence, the sample was biased toward less serious disease with data skewed toward the norm. Extrapolating these results to a wider JIA population is not advisable due to selection criteria and sample size. The findings show that physiotherapy is a safe intervention that can improve outcome in JIA, an incurable disease with limited treatment options.

Recommendations

Either treatment has the potential to benefit the child with JIA, although no clear difference was established between the efficacy or cost of the two treatments. In the absence of such evidence, it could be argued that if one treatment is more enjoyable and improves compliance with exercise, then this should be the treatment of choice. Further research would be needed to determine if the costs of building new hydrotherapy pools is justifiable or cost effective in the long term.

Methods

We devised a multicenter randomized controlled, partially blinded trial with 100 patients in a control arm receiving land physiotherapy only (land group) and 100 patients in an intervention arm receiving a combination of hydrotherapy and land physiotherapy (combined group). Patients in the land group had 16 one-hour sessions of land-based physiotherapy at a trial center over 2 weeks. They then received land physiotherapy once a week or fortnight for 2 months, as outpatients. Community physiotherapists used their clinical judgment to decide whether a patient's treatment should continue or stop, but were asked to exclude hydrotherapy until a 6-month assessment had been completed. Swimming was not excluded from patients' usual activities. Patients in the combined group had 8 one-hour sessions of hydrotherapy, and 8 one-hour sessions of land physiotherapy at a trial center over 2 weeks. They then received hydrotherapy only, once a week or fortnight for 2 months, as outpatients. The intervention protocol was standardized and all physiotherapists trained in its administration. Intervention was terminated or modified only if treatment exceeded the study protocol, medical complications occurred, surgery was required, disease flared or became unstable.

Further research/reviews required

(see Recommendations)

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