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Buteyko breathing technique and asthma in children: a case series

Asthma is a common disorder in New Zealand, with estimates of prevalence as high as one in six of the population affected.[1] The annual cost of asthma drugs is high—in 2005, approximately NZ$34 million was spent on inhaled corticosteroids and β_2-agonists.[2]

The use of β_2-agonist in chronic asthma is itself contentious, with a recent meta-analysis concluding that regular use of β_2-agonist resulted in tolerance within 1–3 weeks as well as being pro-inflammatory to the airways.[3] Interventions that have the potential to reduce β_2-agonist insult to the airways of people with chronic asthma are deserving of further investigation.

The Buteyko breathing technique (BBT) is an intervention for asthma that is associated with significant reductions in medication use as well as improvements in other indices such as symptom scores and quality of life in adults.[4–7]

Previous work demonstrates the effectiveness of BBT in adults.[4,6] To date, there has been no published work looking at the impact in children.

We report a case series that considers the place of BBT in children.

Methods

To find suitable participants (Table 1), we approached local general practices and advertised in the local (Gisborne) newspaper. Twenty-six children were identified of whom 8 (aged 7–16 years) were eligible for inclusion; being previously diagnosed with asthma by their GP and using medication for asthma for at least 6 months with significant use of medication for asthma in the 2 weeks prior; no prior instruction in BBT; and no significant unstable medical condition.

Intervention

Participants underwent training in BBT (by a representative of the Buteyko Institute of Breathing and Health) over five sessions of 60–90 minutes held over 5 consecutive days. BBT consists of a series of exercises promoting nasal breathing and periods of hypoventilation.[8]

Outcome measures

Prior to tuition, and at 3 months following instruction in BBT, participants (along with their parent/guardian) self completed a questionnaire ascertaining:

- Medication use over the previous 2 weeks;
- Symptom scores over the previous 2 weeks;
- Courses of oral steroids over the previous 3 months; and

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- Absences from school due to asthma over the previous 3 months and admissions to hospital over the previous 3 months.

At 3 months, participants were also asked whether BBT had been helpful or not in the management of their asthma. Any changes in medication after instruction were to be in association with their own general practitioner.

Results

Table 1. Characteristics of participants at end of run-in

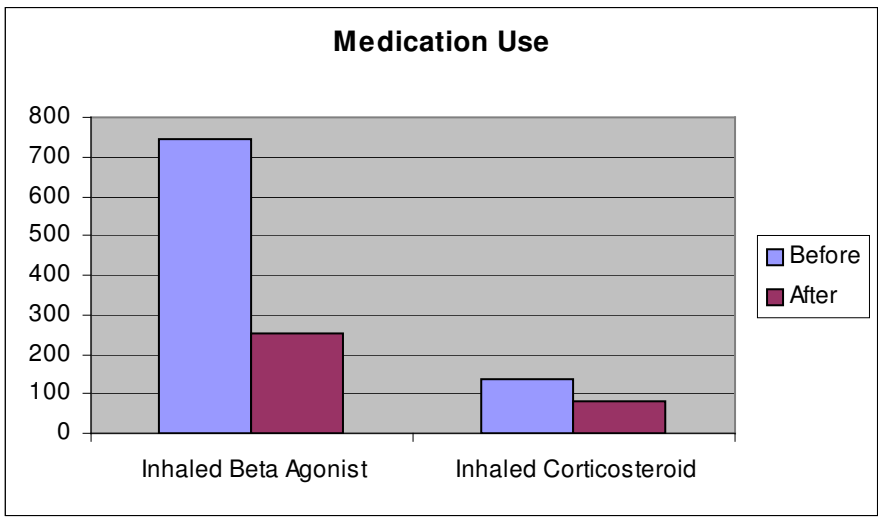
Variable	BBT Group (n=8)
Gender (male : females)	4 : 4
Mean age (range) in years	11.1 (8–14)
Ethnicity (European : Maori)	4 : 4
Mean years with asthma (range)	7.5 (4–12)
Mean daily adjusted β_2-agonist dose in mcg equiv salbutamol (standard deviation)	742 (624)
Mean daily adjusted inhaled steroid dose in mcg equiv fluticasone (standard deviation)	137 (119)

BBT=Buteyko breathing technique.

Changes in medication use

Average β_2-agonist use reduced from 743 mEq of salbutamol per day to 254 mEq/day, a drop of 66%. Inhaled steroid use reduced from 138 mEq of fluticasone per day to 81 mEq/day, a drop of 41% (Figure 1).

Figure 1. Medication use (mEq) by participants before and after training in Buteyko breathing technique



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Qualitative measures

There were no admissions to hospital in the 3 months before or after instruction in BBT for any of the participants. In the 3 months prior to instruction in BBT, 8 days of school were missed by three participants. There were 4 days missed by two participants in the 3 months after BBT tuition. The post-instruction period of 3 months did, however, include 6 weeks of school holidays.

In the 3 months prior to tuition in BBT, three participants had 11 courses of oral steroids, and in the 3 months post-tuition, one participant had one course of oral steroids. Average symptom scores in the 3 months before tuition in BBT went from 1.5 to 0.875 in the 3 months post-tuition (where 0=no symptoms, 1=mild, 2=moderate, and 3=severe).

Of the eight participants, one reported "no change" in his/her asthma, six reported "slightly improved", and one reported "markedly improved". There were no reports of "slightly deteriorated" or "marked deteriorated".

Discussion

There have been several published randomised controlled trials involving the use of BBT in adults with asthma.[4,6,7] These trials have all shown positive results with marked reductions in inhaled β_2.agonist along with reductions in inhaled corticosteroids without negative impact on measures of lung function and with no apparent adverse effect. There is, however, no data for BBT in a paediatric setting.

In this study we used accepted diagnostic criteria for asthma.[9] We recognise that this has the potential to include a broad group, including dysfunctional breathing.[10]

In this series, we have identified that BBT is associated with change in medication in children that mirrors results found in adults (Table 2).

Table 2. Comparison of medication reductions in BBT trials to date

	Brisbane[3]	Gisborne[5]	Nottingham[6]	This series
Beta-agonist reduction	95% *	85%	100% *	66%
Inhaled steroid reduction	49%	50%	41.5% **	41%

BBT=Buteyko breathing technique; *Results are reported as mean unless marked with * in which case are median; **Nottingham did not attempt reductions in inhaled steroid use until assessment of airways hyper-reactivity was finished.

In addition to reduction in medication there were improvements in measures of quality of life scores, symptom scores, and also a reduced number of courses of oral steroids.

The small size and self-selection of the patient group in this case series limits any more meaningful commentary on the results.

However given the association between BBT and medication reduction in this group of children, and the similarity with adults, we suggest that BBT would merit exploration by a randomised controlled trial in children. In addition, we agree with a

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recent review of BBT which states that further research is necessary to establish whether BBT is effective, and if so, how it may work.[11]

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