

Evaluation of Massage with Essential Oils on Childhood Atopic Eczema

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Childhood atopic eczema is an increasingly common condition in young children. As well as being irritating to the child, it causes sleepless nights for both the child and the family and leads to difficulties in parental relationships and can have severe effects on employment. A group of eight children, born to professional working mothers were studied to test the hypothesis that massage with essential oils (aromatherapy) used as a complementary therapy in conjunction with normal medical treatment, would help to alleviate the symptoms of childhood atopic eczema. The children were randomly allocated to the massage with essential oils group and both counselled and massaged with a mixture of essential oils by the therapist once a week and the mother every day over a period of 8 weeks. The preferred essential oils, chosen by the mothers for their child, from 36 commonly used aromatherapy oils, were: sweet marjoram, frankincense, German chamomile, myrrh, thyme, benzoin, spike lavender and *Litsea cubeba*. A control group of children received the counselling and massage without essential oils. The treatments were evaluated by means of daily day-time irritation scores and night time disturbance scores, determined by the mother before and during the treatment, both over an 8 week period; finally general improvement scores were allocated 2 weeks after the treatment by the therapist, the general practitioner and the mother. The study employed a single case experimental design across subjects, such that there were both a within-subject control and between-subjects control, through the interventions being introduced at different times.

The results showed a significant improvement in the eczema in the two groups of children following therapy, but there was no significant difference in improvement shown between the aromatherapy massage and massage only group. Thus there is evidence that tactile contact between mother and child benefits the symptoms of atopic eczema but there is no proof that adding essential oils is more beneficial than massage alone.

Further studies on the essential oil massage group showed a deterioration in the eczematous condition after two further 8 week periods of therapy, following a period of rest after the initial period of contact. This may have been due to a decline in the novelty of the treatment, or, it strongly suggests possible allergic contact dermatitis provoked by the essential oils themselves. The results of this study indicate the necessity of prolonged studies with novel plant extracts as short-term beneficial results could be overturned by adverse effects after repeated usage. Copyright © 2000 John Wiley & Sons, Ltd.

Keywords: childhood eczema; atopic eczema; aromatherapy; massage; essential oils; counselling.

INTRODUCTION

The number of children suffering from atopic eczema has increased over the past 30 years (Williams *et al.*, 1996) especially in children between the age of 2 and 5 years. Atopic childhood eczema has a profound effect on the lives of both the child and the parents. Babies and children with eczema suffer pain, irritation and disfigurement from the dermatitis; when they do not sleep well, neither do the parents; this therefore has severe effects on parental relationships and their employment (Cork, 1999).

Childhood eczema has been called 'the disease of the advantaged' (Williams *et al.*, 1996), as no credible evidence has been found in the literature to substantiate the argument that economic disadvantage increases the

child's potential risk to eczema, and, in fact the reverse has been found (Williams *et al.*, 1996). Only 4% of children born to unemployed fathers suffered from the disorder compared with 6.7% in the group born to employed fathers (Friedmann, 1997). Atopic eczema is not a recognized condition in the Third World countries, where the young child is close to the mother's body.

Current treatments of atopic eczema include: antibiotics to combat infection; topical steroids to suppress inflammation; moisturizers to control dryness, etc. Due to the lack of success with conventional therapy, alternative therapy has been used in some cases of childhood eczema, e.g. traditional Chinese medicine (TCM), used at the Great Ormond Street Hospital for Children which involved oral Chinese herbal concoctions, which proved superior to a placebo-controlled treatment, but involved severe difficulties in the preparation of the herbal remedies and also the taste was abhorrent to most children (Sheehan and Atherton, 1992).

There is some evidence to suggest that the negative

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psychological influence in the physical symptoms of childhood eczema could be improved with increasing tactile contact between mother and child, as there was often a lack of maternal contact and caressing of the atopic eczema child, i.e. an abnormal mother-child symbiosis (Giuliani and Gentili, 1986), also the psychosomatic aspects of the parent-child relationship should be considered in the management of the condition (Ring and Palos-Pfander, 1995). As many cases of childhood eczema were connected to periods of past separation from the mother (Anderson, 1997), the crucial time spent by the mother with the child could restore the bonding attachment from physical separation and emotional rejection. These various lines of evidence suggest that massage could prove a valuable alternative medicine for the eczematous child or be useful as an adjunct to conventional therapy.

There is anecdotal evidence for the successful treatment of many illnesses, including eczema, using essential oils (Tisserand, 1977; Davis, 1988; Lawless, 1994; Price and Price, 1995). Tea tree oil has been shown to benefit some eczema conditions in a randomized clinical trial (Bassett *et al.*, 1990). As eczema is often associated with stress, and at least one clinical trial showed an apparently better result at reducing stress after using aromatherapy compared with massage alone (Wilkinson, 1995), the use of essential oils in the treatment of eczema might complement the conventional treatment.

The purpose of this study was to determine if massage with or without essential oils could be beneficial as a complementary treatment of childhood atopic eczema, as measured by a reduction in night-time disturbance and day-time irritation scores, as these two measures are a reflection of the two major problems encountered in the children i.e. sleeplessness and itching/scratching respectively.

MATERIALS AND METHODS

Essential oils. A choice of 36 essential oils were offered to the mothers to choose on behalf of their child, as the children were considered to be too young to be able to make this choice, and secondly it was therefore important that the mothers, who would be using the oils, actually liked the odours. The 36 oils constituted the normal range of common, aromatherapeutic essential oils. The following eight oils represent their combined choices: *Litsea cubeba*, sweet marjoram, spike lavender, frankincense, myrrh, red thyme, benzoin (resinoid, not a true essential oil) and German chamomile (all obtained from Butterbur & Sage, Reading).

Three of these eight essential oils were then selected by each mother for a blend, and each child had a different mixture of essential oils in a 1:1:1 proportion selected from the original eight, e.g. sweet marjoram: frankincense: German chamomile; myrrh: benzoin: *Litsea cubeba* etc). Each mixture was diluted in almond oil to give a 2% solution for massage, a standard procedure in aromatherapy (Tisserand, 1977; Davis, 1988; Lawless, 1994; Price and Price, 1995). The essential oils were tested for purity and exact composition using a Shimadzu GC 8A, with an OV 101 column, 50m × 0.32 mm and a temperature programme set at 4°C min⁻¹ from 100° to 230°C.

Table 1. Age, sex and sibling details of children used in the studies

Child	Date of birth	Sex	Siblings
Massage alone			
A	19.5.93	M	2
B	21.12.92	F	1 (half)
C	22.2.94	M	1 (half)
D	4.1.93	M	nil
E	27.2.92	M	2
F	26.10.91	F	nil
G	22.8.93	F	1
H	6.5.94	M	1
Aromatherapy massage			
J	20.4.93	M	1
K	11.1.93	F	2
L	7.7.94	F	4
M	10.1.93	M	2
N	3.1.94	F	1
O	26.9.92	M	nil
P	20.10.93	M	1
Q	9.5.91	F	1 (twin)

Sample. Sixteen children were chosen from a middle class socio-economic background, born to professional working mothers and living in a family unit with the natural father, typical of the families in which childhood atopic eczema is commonly found. The children were aged 3–7 years. The eczema of all the children was atopic, non-responsive to usual therapy and there were no known causes, e.g. no bereavement, no birth in the family nor home change. There was, however, a period or two of separation from the mother before the child was 3 years old. All the children attended school or pre-school for at least half a day and were taken and collected by their nannies. Children were selected for the trial by the therapist after initially approaching the schools and asking for names of children with eczema; the parents were then approached by the therapist through the school, and when they agreed to the trial an explanatory letter was provided by the General Practitioner (GP) asking for their cooperation. The 16 children were randomly allocated to massage and essential oil massage groups. Each group was matched by age, sex, number of siblings, working mother, etc. (Table 1).

Massage. The therapist made weekly home visits to the clients throughout the treatment period, where she did a 30 min massage on the child, and counselled the child and the mother together. The mother was taught how to massage the child using gentle effleurage or stroking movements (Davis, 1988; Lawless, 1994; Price and Price, 1995) and did this every day on the arms, legs, front and back for 10 min.

Bath. All children were bathed every day with the addition of 6 drops of the same essential oil mix, as used for their massage, being added only to the water of the essential oil massage group.

Measures. The mothers were taught how to score day-time irritation and night-time disturbance on a 0 to 10 scale, zero being equivalent to no day-time irritation and also a peaceful night, whilst a score of 10 was used to denote extreme irritation and very disturbed nights. The scale was purely numerical, and whole numbers were

Table 2. Night time disturbance scores^a

	Mean \pm SE	Range	t-test ^b
Aromatherapy massage			
Pre-treatment	2.33 \pm 0.72	1.8–2.9	
During first treatment	0.94 \pm 0.10	0.3–1.8	$p < 0.002$
During second 8 week treatment	3.75 \pm 0.03	3.4–4.6	$p < 0.002$
During third 8 week treatment	3.91 \pm 0.26	3.0–4.7	$p < 0.002$
Control: Massage alone			
Pre-treatment	2.06 \pm 0.52	0.3–3.6	
During treatment	1.14 \pm 0.26	0.0–2.9	$p < 0.002$

^a Score 0–10 (0, no disturbance; 10, very numerous disturbances).

^b The data were compared between the pre-treatment and treatment means using the 2-tailed Student's *t*-test.

No significant differences were found between the pre-treatment and treatment means respectively, in the aromatherapy massage and massage alone groups.

used in grading. The scoring was done on a daily basis for 8 weeks before the treatment and for 8 weeks during the treatment. The mean score for the whole 8 week period was used in comparing the treatment scores with the pretreatment scores; the data in the two groups were compared using the 2-tailed Student's *t*-test.

Two weeks after the end of the treatment, the child's GP rated the clinical condition of the child, based on an overall appearance of the coverage of eczema over the body, reddening and amount of scratching, and this was compared with the original rating to give the 'general improvement score', based on a scale of 0–10: zero indicated no improvement and 10, a very substantial improvement. The therapist and the mother similarly rated the child's condition, giving three separate improvement scores in order to avoid possible bias by either the mother or aromatherapist in a 'double blind' way, since the GP was not aware of allocations to groups or whether treatments had been given.

The massage group was treated in the same way as the essential oil massage group, except for the omission of essential oils. Both groups of mothers had been allowed to choose their preferred essential oils, although only the aromatherapy group used them; the mothers and children were not actually told which group they were in, although there was a strong possibility that they would be aware of this due to the slight odour apparent in the diluted essential oil mixture. The children in the massage group were massaged with almond oil.

The experiments were designed to give an overlap in the treatment of the two groups: starting in March, the first aromatherapy group was treated for 8 weeks, with the massage group beginning their 8 week treatment after the first 4 weeks (i.e. in April, mid-way during the first intervention). Four children in each group were seen by the therapist on Wednesday and the second four on Friday. The study employed a single case experimental design across subjects, such that there were both a within-subject control and between-subjects, control, through the interventions being introduced at different times. At the point of intervention each subject had the other subjects as controls.

The night-time disturbance assessments for the aromatherapy group were also used for a second and third period of treatment. The second aromatherapy massage treatment overlapped the massage treatment group, commencing in May, during week 4 of the latter group's treatment. The third aromatherapy massage treatment was delayed until after the Summer holidays,

giving a gap of 2 months in between. This was in order to see if there was a progressively beneficial effect caused by the essential oils.

RESULTS

There was a significant reduction in the night-time disturbance score after both treatments, compared with the pre-treatment scores (Table 2). There was no significant difference in the scores between the massage and essential oil massage groups before treatment and after treatment. The two further 8 week treatment sessions for the essential oil massage group showed significant *increases* in the night-time disturbance scores compared with the pre-treatment scores (Table 2).

The day-time irritation scores were significantly decreased after both treatments compared with the pre-treatment scores (Table 3). There was no significant difference between the massage only treatment and the essential oil massage treatment.

No progressive improvement was apparent for the parameters studied during the 8 week treatments and improvement was shown immediately after the first week of treatment.

The 'general improvement scores', as rated by the GP, the aromatherapist and the mother, taken 2 weeks after the end of the treatment, showed no significant difference between the aromatherapy group and the massage only group (Table 4).

DISCUSSION

Both aromatherapy and massage without essential oils was shown to improve the atopic eczema of all the children to a significant extent in the short term, as measured by a decrease in night-time disturbance and day-time irritation criteria over 8 weeks, indicating that tactile contact between mother and child could have alleviated the symptoms. This is in agreement with the suggestion that eczema could be improved with increasing tactile contact between mother and child (Giuliani and Gentili, 1986). The placebo effect (Beecher, 1955) could also have been involved, due to expectation of a beneficial result, as indicated by the immediate improve-

Table 3. Daytime irritation scores^a

	Mean ± SE	Range	t-test ^b
Aromatherapy massage			
Pre-treatment	4.70 ± 1.60	4.0–5.4	
During treatment	2.13 ± 0.45	1.6–2.5	$p = <0.002$
Control: Massage alone			
Pre-treatment	5.70 ± 2.39	2.0–8.3	
During treatment	4.70 ± 2.88	0.1–3.6	$p = <0.002$

^a Score 0–10 (0, no irritation; 10, very severe irritation).

^b The data were compared between the pre-treatment and treatment means using the 2-tailed Student's *t*-test. No significant differences were found between the pre-treatment and treatment means respectively, in the aromatherapy massage and massage alone groups.

ment in the scores after the first week, but no further progressive improvement.

The fact that each child had previously failed to respond to conventional treatment alone, suggests that complementary therapy improved the outcome of conventional treatment. There was also a general perceived improvement in the clinical condition of most of the children as indicated by the scores given by the GP, the therapist and the mother. The greatest improvement score was indicated by the mothers, who had more contact with the child, and may have been unduly biased in seeing an improvement, whilst the GP was 'blinded' and therefore possibly more accurate in assessment. The therapist, was almost as positive about the outcome as the mothers, and again could have been biased. As there was no significant difference between the two treatments, it suggests that bias, if any, was equal for both treatments.

The lack of an increased effect of essential oils to that of massage, supports most studies on aromatherapy massage in a number of clinical trials, where only 'well-being' or psychological assessments have been shown to improve and all other physiological and functional parameters were insignificant (Stevenson, 1994; Dunn *et al.*, 1995; Corner *et al.*, 1995; Lis-Balchin, 1997). However, low concentrations of odorants can have significant psychological and physiological effects (Kirk-Smith and Booth, 1990; Hardy *et al.*, 1995) and even anosmics can be affected by inhalation of essential oils, as shown by changes in cerebral blood flow (Buchbauer *et al.*, 1993). Expectation of odorants can also have profound effects (Knasko *et al.*, 1990), therefore the children and their mothers in the essential oil massage group were not told that essential oils were to be used. There is no possibility of a proper control aroma being used in aromatherapy clinical trials, as 'aromatherapy' indicates that 'aroma' *per se* is a therapeutic tool;

this 'aroma' was also used in the present trial as a chemical tool as it was massaged into the skin.

The improvement observed in the initial essential oil massage treatment was reversed in the two subsequent sessions after a short break in treatment, i.e. worsening of the eczema occurred, even compared with the baseline. There is a possibility that the initial novelty of the mother's tactile attention had worn off, and that the placebo effect had disappeared. The child may have perceived the non-empathetic nature of the later massages, due to the mother's lack of enthusiasm and in this respect, the initial provision of a relationship and then its subsequent withdrawal may have created stress, with associated worsening in the eczema. The results are also in keeping with the lack of continuous improvement due to massage, with and without essential oils, seen in the study (not shown), i.e. there was an immediate improvement in the scores as soon as massage began, followed by very slight changes in the score around the mean, during the 8 week period.

Another possible explanation could be the development of contact or allergic contact dermatitis to the essential oils themselves (Spott and Shelley, 1970; Rudzki *et al.*, 1976; Schaller and Korting, 1995), which would not be surprising in these children already suffering from dermatitis. Allergic contact dermatitis occurs after a short or long break, following an initial period of contact with the chemical(s). Further sessions of massage alone could have provided a control for this, however, this deterioration was not expected and thus not planned for. The deterioration occurred in each child and was not related to the essential oil used, in particular benzoin, which has been shown to cause allergic contact dermatitis (Spott and Shelley, 1970).

In conclusion, the complementary use of massage with or without essential oils in conjunction with conventional

Table 4. General improvement scores^a 2 weeks after cessation of treatment

	GP	Therapist	Parent
Aromatherapy massage			
Score	2.8 ± 0.65	3.9 ± 0.67	5.4 ± 0.62
Range	0–5	0–7	2–8
Control: Massage alone			
Score	3.0 ± 0.60	4.0 ± 0.91	6.3 ± 0.59
Range	0–5	0–9	4–9

^a Score 0–10 (0, no improvement; 10, considerable improvement).

There was no significant difference in the means between the two groups in each case.

treatment and counselling, had at least a short term positive effect on the symptoms of childhood atopic eczema. There was, however, no evidence for the extra benefits of using essential oils. Although this study could only be considered as a preliminary trial due to the small number of children used, the same aromatherapist was involved with all the children, which reduced differences in treatments between the children and the two groups, making statistical comparisons relevant.

The most interesting fact to emerge from this study

indicates the necessity of prolonged studies with essential oils and novel plant extracts, as short-term beneficial results could be overturned by adverse effects, e.g. possible sensitization, after repeated usage.

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