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The Effect of Reflexology in Infants with Viral Bronchiolitis - A Pilot Study

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Summary

Background: Acute viral bronchiolitis is a common cause for hospitalization among infants up to two years of age. Currently there is no effective treatment, and the mainstay is supportive treatment included. Reflexology is a commonly used adjunct treatment. It is based on applying pressure on different points in the hands and feet that are believed to represent different body organs. It has been found to have some positive impact on respiratory symptoms.

Methods: 30 patients who were admitted due to bronchiolitis were given reflexology treatment that lasted about twenty-five minutes. Wang score was performed before and thirty minutes following the treatment. The data was compared to data of thirty patients who were admitted due to bronchiolitis during the same period but were not enrolled in the study.

Results: There were no significant epidemiological differences between the treatment group and the control group. There was a trend of less days of oxygen that requires (3.53 vs. 2.66) but the difference did not reach statistical significance (p value 0.112). There was a significant decrease in Wang score 30 minutes after the treatment (6.96±2.34 vs. 4.1±1.99 p value 0.002) the decrease was mostly due to improvement in the respiratory rate (1.96±0.6 vs. 1.43±0.71 p value 0.003) and in the general condition (1.33±1.14 vs. 0.63±0.83 p value 0.009).

Conclusions: a single reflexology treatment helped to reduce respiratory rate and improve general condition in infants with viral bronchiolitis. Further studies should be conducted to further understand the mechanism.

Background: Acute bronchiolitis is a common cause of hospitalization in patients under two years of age. It is mostly caused by respiratory syncytial virus (RSV), but it may also be caused by other viruses such as adenovirus, rhinovirus, parainfluenza etc. [1]. The clinical manifestations include fever, rhinorrhea, cough, tachypnea, dyspnea and hypoxia. Currently there is no effective treatment, and the mainstay is supportive treatment including maintaining hydration, oxygen supplementation and observation for complications [2].

Keywords: Bronchiolitis; Reflexology; Wang Score

Abbreviations: RSV: Respiratory Syncytial Virus; WBC: White Blood Cells; CRP: C- Reactive Protein

Introduction

Different treatment options such as inhaled and systemic corticosteroids [3], inhaled beta agonists [4] and inhaled adrenaline [5] proven to be unbeneficial. Inhaled hypertonic saline is used with modest success [6]. Lately, continuous positive airway pressure has been used in infants with more severe disease [7]. Chest physiotherapy in different techniques has been studied in patients with viral bronchiolitis. Whereas there were almost no side effects, and some studies showed mild improvement, none of the techniques demonstrated reduction in the severity of the disease [8]. Reflexology is a commonly used adjunct treatment.

It is based on applying pressure on different points in the hands and feet that are believed to represent different body organs. Reflexology has been used in different respiratory tract infections [9] and on pulmonary function tests in patients with asthma [10], with some success. It has also been tested in newborns with respiratory distress syndrome, wherein respiratory rate [11] has decreased. Whole body massage was found to be helpful in newborns with opioid withdrawal syndrome [12]. It has been shown to be safe treatment and well tolerated even among very young infants. Therefore, we decided to evaluate the effect of reflexology treatment on patients with viral bronchiolitis.

Aim

The aim of the current study is to evaluate the influence of reflexology on infants who are admitted to the hospital due to viral bronchiolitis.

Methods

This is a Prospective Controlled Study

Children under two years of age who were admitted to the pediatric ward in Hillel Yaffe Medical Center due to viral bronchiolitis between January 5th and January 30th, 2023, were enrolled during the second or third day of their hospital stay. 30 patients were enrolled. As the reflexologist was available two days per week (Mondays and Thursdays), only children that were admitted during the day's prior (Saturdays, Sundays, Tuesdays, and Wednesdays) were recruited. Wang score, which is a validated score for the evaluation of acute respiratory condition [13] was performed before and thirty minutes following the reflexology treatment. The Wang score is a four-item respiratory score that consists of respiratory rate per minute, wheezing, chest retraction and general condition. Each sign is scored from zero to three per its severity.

All Parents Signed Informed Consent Prior to the Treatment

The reflexology treatment itself lasted twenty-five minutes and included calming by warming and rubbing the feet with sesame oil, followed by massaging specific points in the feet that are believed to represent the respiratory system. All treatments were performed by NR, who is a licensed reflexologist with five years of experience and who is a regular employee in our medical center. Patients were excluded if the parents refused to participate. The data including age, gestational age, medical history, length of admission, length of oxygen treatment, other medications if needed, x ray and blood exams if needed and respiratory viruses were compared to data of patients who were admitted due to bronchiolitis during the same period but not treated with reflexology. The data was compared to data of thirty patients who were admitted due to viral bronchiolitis during the same period but were not enrolled in the study group due to the timing of admission.

Statistical Methods

Parametric data was compared using Student's t-test for unpaired samples. Non-parametric data was compared using $\chi 2$ test. Statistical significance was defined as $p < 0.05$. The study was approved by the local ethics committee (HYMC- 135-22) and registered in an international database (ClinicalTrials.gov ID: NCT05799677).

Results

Thirty patients were enrolled in the study group. Two families refused to participate. Thirty patients were enrolled in the control group. No negative side effects were reported during this study. Table 1 presents the demographic data of the two groups. As can be seen in the table, the two groups were similar in the demographic data. The two groups did not differ in relation to age, gender, weight, gestational age, birth weight and method of delivery. Table 2 presents the hospitalization data of the two groups. As can be seen there was no significant difference between the two groups in length of hospitalization, percents of positive RSV, number of viruses found, white blood cells and CRP (C-reactive protein) in blood exams and percentage of patients who were treated with antibiotics.

Table 1: Demographic data.

	Study Group	Control Group	P Value
Age(weeks)	19.5±17.26	19.6±5.54	0.963
Gender(females)	9(30%)	12(40%)	0.42
Weight(grs)	66126±2494	6654±2219.8	0.946
Gestational age	38.06±2.37	38.2±5.167	893
Birth weight	3074±641	3062±610	0.93
Method of delivery (cesarean section)	7(23%)	7(23%)	1

Table 2: Hospitalization data.

	Study Group	Control Group	P Value
Length of hospitalization (days)	4.9±1.8	4.63±1.68	0.66
Length of oxygen (days)	3.53±1.96	2.66±2.21	0.112
RSV positive	23(76%)	24(80%)	0.92
Number of viruses	1.38±0.66	1.47±0.6	0.58
WBC	12149±3083	11063±3266	0.19
CRP	26.79±29.7	20.72±20.7	0.36
Antibiotic treatment	5(16.7%)	6(20%)	0.74

RSV: Respiratory Syncytial Virus, WBC: White Blood Cells, CRP: C- Reactive Protein

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The number of days during which oxygen supplementation was required was lower in the reflexology group (3.53 vs. 2.66) but the difference did not reach statistical significance (p value 0.112). Table 3 presents the Wang score results before and after the reflexology treatment. As can be seen in the table, there was a significant decrease in Wang score 30 minutes after the treatment (6.96±2.34 vs. 4.1±1.99 p value 0.002) the decrease was mostly due to improvement in the respiratory rate (1.96±0.6 vs. 1.43±0.71 p value 0.003) and in the general condition (1.33±1.14 vs. 0.63±0.83 p value 0.009).

Table 3: Wang score results before and after the reflexology treatment.

	Before Treatment	After Treatment	P Value
Respiratory rate	1.96±0.6	1.43±0.71	0.003
Wheezing	1.36±0.7	1±0.77	0.063
Retractions	1.3±0.7	1.03±0.6	0.114
General condition	1.33±1.136	0.63±0.83	0.009
Total	6.96±2.34	4.1±1.99	0.002

Discussion

Acute bronchiolitis is a common viral disease that causes significant distress. Currently there is no specific treatment that is routinely recommended. This is a frustrating situation for both parents and caregivers. Other complementary treatments, such as traditional Chinese medicine has shown clinical improvement and shorter hospitalization [14]. Reflexology has also been found useful in other respiratory symptoms. This is the first study, to the best of our knowledge, to evaluate reflexology treatment in young patients with bronchiolitis.

Our findings show that reflexology treatment induced improvement in the clinical status of the patients as expressed by Wang score, the decrease was mostly due to improvement in the respiratory rate and in the general condition. Previous studies showed the ability of reflexology to reduce respiratory rate and [15], in bronchiolitis increased respiratory rate is a significant part of the distress. Reflexology has also been shown to reduce pain [16]. A recent review attempted to define the mechanisms of action in which reflexology may influence patients [17]. Out of the mechanisms that were suggested we believe that at least some of the positive effects can be attributed to the calming effect of the treatment and the healing of human touch. There are studies that suggest that alleviation of stress, for example with the assistance of medical clowns, reduce the length of hospitalization due to respiratory reasons and shorten the duration of respiratory symptoms [18].

It is logical to assume that overall wellbeing has a significant effect on the respiratory situation. Studying has some limitations. The first one is the relatively small number of patients who participated. The second limitation is that there was no shaming procedure and neither the examiner nor the parents were blinded to the intervention. We also performed a single treatment during the hospitalization; it is possible that additional treatments could have an accumulative effect and further assistance improvement.

Conclusion

This is a preliminary study to evaluate the effect of reflexology on infants with viral bronchiolitis. There was a short-term improvement, and no side effects were reported. Further studies are required to establish improvement and to help understand the mechanism of action.

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Conflicts of Interest

The authors have no conflicts of interest relevant to this article to disclose.

Author Contribution

Dr. Vered Nir conceptualized the study, supervised the conduction of the study and composed the manuscript. Dr. Shaden Diab, Dr. Inon Roterman and Dr. Vered Schichter-Konfino participated in the conduction of the study and reviewed the manuscript. Dr. Erez Nadir assisted with statistical analysis and registration of the study and reviewed the manuscript. Dr Adi Klein supervised the conduction of the study and reviewed the manuscript.

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