Behavioral Therapy and Pelvic Floor Muscle Training in the Treatment of Infantile Insensible Urinary Incontinence: a Case Report

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Abstract. [Purpose] The purpose of this study was to evaluate the efficacy of behavioral therapy and pelvic floor muscle training in the treatment of a 5 year-old female child presenting insensible urinary incontinence (IUI) symptoms. [Subjects and Methods] Outcome measures included a voiding diary to quantify symptoms and urinary frequency, and surface electromyography was measured at the beginning and end of the treatment. Behavioral therapy included the provision of information regarding hygiene habits, voiding position, the anatomical and physiological basis of urinary incontinence, and bladder training using a voiding diary on a specified schedule. Pelvic floor muscle training was performed in different positions using sets of sustained and fast contractions. The child received training in a total of 25 sessions. [Results] The child showed improvement of symptoms according to the voiding diary and electromyographic values. [Conclusion] Behavior therapy and pelvic floor muscle training following to our protocol may have improved the symptoms of IUI in this child. Key words: Pelvic floor, Physical therapy modalities, Urinary incontinence

INTRODUCTION

According to the International Continence Society1, Insensible Urinary Incontinence (IUI) is the complaint of an involuntary loss of urine without the awareness of the subjects as to how the loss occurred. Though the prevalence of urinary incontinence (UI) in children is not well known, one study of 482 children attending primary care clinics in United States found a prevalence of around 10.5%2. Conservative treatment, including medication and physical therapy, is considered the first line of treatment for UI. Behavioral Therapy (BT) and Pelvic Floor Muscle Training (PFMT) are techniques used for treatment in such cases3.

OBJECTIVE

The goal of this study was to evaluate the efficacy of BT and PFMT for a child with IUI symptoms.

CASE REPORT

This is a case-study of 5 year-old female child with IUI symptoms who was referred to the Physical Therapy Department at CAISM/UNICAMP. Her parent signed a consent form for treatment and approved the use of the case data for scientific purposes and publication. The child was overweight, white and presented with a history of recurrent urinary infection. She had used Oxibutinina (4 mL /day) for 18 months with partial improvement of symptoms. Objective evaluation measures included a voiding diary which was used by the patient to quantify symptoms and urinary frequency, and surface electromyography (EMGs) at the beginning and end of the treatment. EMGs Miotool 200 URO® (Miotec) was used to teach the child how to contract the pelvic floor muscles. One channel was positioned at the perineum and the second at the right medial malleolus as a reference for EMG. The data were expressed in microVolts (μV). Mean values of maximal voluntary contraction (phasic fiber) and sustained contraction (tonic fiber) were evaluated.

The child received 25 sessions of physiotherapy treatment: 9 sessions of PFMT, and 16 sessions of BT. Behavioral therapy included the provision of information regarding hygiene habits, voiding position, the anatomical and physiological basis of urinary incontinence, and bladder training using a voiding diary on a specified schedule. The patient was asked to adjust her bladder voiding from every 3 hours to around every 2 hours, since initially there was no improvement of the symptoms. PFMT was introduced to the treatment after observation of UI in triggering situations involving contact with water (through cleaning or swimming, for example). PFMT was performed in different positions (supine, prone, sitting and squatting) using a set of sustained
(6 seconds) and fast (2 seconds) pelvic floor muscle contractions, 10 repetitions in each position. This physical therapy program took place weekly at the hospital in 50-minutes/sessions. The patient was also asked to perform the set of exercises at home daily.

**DISCUSSION**

Our case showed improvement of symptoms after the 10th session of treatment (Table 1), according to the voiding diary, and EMG at the end of the treatment, which showed improvement in the maximal values of both voluntary and sustained contractions (Table 2) of the pelvic floor muscles. During this course of treatment, no urinary infection episodes were observed.

**CONCLUSION**

This case study showed that intervening with BT and PFMT following our protocol may have improved the symptoms of IUI in this child. Future studies are needed to establish this intervention as an effective course of treatment for children with IUI.

| Table 1. Voiding frequency per day and episodes of insensible urinary incontinence per week during treatment |
|-------------------------------------------------|-----------------|-----------------|-----------------|-----------------|
| Voiding Frequency per day (mean)                | Evaluation      | 10th session    | 20th session    | 25th session    |
| Episodes of Insensible Urinary Incontinence per week (mean) | 8               | 8               | 7               | 7               |
| 4                                               | 3               | 0               | 0               |

**Table 2.** Surface electromyography of maximal voluntary contraction and sustainable contraction at the start and end of the intervention

<table>
<thead>
<tr>
<th></th>
<th>1st session</th>
<th>25th session</th>
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<tbody>
<tr>
<td>Maximal Voluntary Contraction</td>
<td>5.94</td>
<td>8.81</td>
</tr>
<tr>
<td>Sustainable Contraction</td>
<td>3.42</td>
<td>7.27</td>
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</tbody>
</table>

**REFERENCES**