Moderating Role of Depression on the Association of Tic Severity with Functional Impairment in Children

Dana Feldman Sadeh1,2, Mira Levis Frenk1,2, Tomer Simha1, Danny Horesh3,4, Tamar Steinberg2,4, Nofar Geva1, Matan Nahon2, Dietrich Andrea5, Hoeekstra Pieter J.3, Daphna Ruhrman1,6, Alan Apter1,4, Silvana Fennig1,4, Noa Benaroya-Milshstein1,4

1The Matta and Harry Freund Neuropsychiatric Tourette Clinic, Schneider Children’s Medical Center of Israel, Petach Tikva, Israel
2Faculty of Social Science, Department of Psychology, Bar-Ilan University, Ramat Gan, Israel. New York University School of Medicine, Department of Psychiatry, New York, NY
3Sackler Faculty of Medicine, Tel Aviv University, Tel Aviv, Israel. University of Groningen, University Medical Center Groningen, Department of Child and Adolescent Psychiatry, Groningen, The Netherlands. 4Baruch Hirsch School of Psychology, Reichman University, Herzliya, Israel

Introduction

Chronic tic disorders (CTDs) commonly co-occur with other psychiatric disorders. CTDs have been linked to functional impairment and reduction in quality of life. Insufficient research is available on depressive symptoms in patients with CTD, especially children and adolescents, yielding conflicting findings.

Objectives

To investigate the presence of depressive symptoms in a cohort of children and young adolescents with CTD, and to test whether they moderate the link between tic severity and functional impairment.

Methods

The sample consisted of 85 children and adolescents (6-18 years; m=10.5±2.63; 80% males) with a CTD (59% with TS) who were treated in a large referral center. Participants were evaluated using gold standard self and clinician-reporting instruments to measure tic symptom severity and tic-related functional impairment (Yale Global Tic Severity Scale); depression (Child Depression Inventory); and obsessive-compulsive symptoms (Children Yale Brown Obsessive Compulsive Scale) as well as Attention Deficit Hyperactivity Disorder (ADHD) diagnosis.

Results

Depressive symptoms (mild to severe) were exhibited by 21% of our sample (Figure 1). Study participants with CTD and comorbid ADHD (50.6%) and/or OCD (12.9%) had higher rates of depressive symptoms compared to those without comorbidities. Significant correlations were found within and among all tic related and OCD related measures, yet depressive symptoms only correlated to tic-related functional impairment (Table 1). Depression significantly and positively moderated the correlation between tic severity and functional impairment (Table 2 and Figure 2).

Table 1: Correlations

<table>
<thead>
<tr>
<th>tic severity</th>
<th>tic impairment (YGTSS)</th>
<th>OCD Symptom Severity (CY-BOCS)</th>
<th>Obsessive symptom severity (CY-BOCS)</th>
<th>Compulsive symptom severity (CY-BOCS)</th>
<th>ADHD Diagnosis (yes/no)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tic severity</td>
<td>0.08 ± 0.48</td>
<td>0.23* ± 0.011</td>
<td>0.05</td>
<td>0.08 ± 0.474</td>
<td>0.14 ± 0.205</td>
</tr>
<tr>
<td>Tic impairment (YGTSS)</td>
<td>0.13* ± 0.001</td>
<td>0.34* ± 0.001</td>
<td>0.20* ± 0.001</td>
<td>0.07 ± 0.017</td>
<td></td>
</tr>
<tr>
<td>OCD symptom severity (CY-BOCS)</td>
<td>0.33* ± 0.001</td>
<td>0.24* ± 0.001</td>
<td>0.33* ± 0.001</td>
<td>0.04</td>
<td></td>
</tr>
<tr>
<td>Obsessive symptom severity (CY-BOCS)</td>
<td>0.34* ± 0.010</td>
<td>0.08 ± 0.001</td>
<td>0.08 ± 0.001</td>
<td>0.08</td>
<td></td>
</tr>
<tr>
<td>Compulsive symptom severity (CY-BOCS)</td>
<td>0.12 ± 0.001</td>
<td>0.05 ± 0.001</td>
<td>0.53 ± 0.001</td>
<td>0.01</td>
<td></td>
</tr>
</tbody>
</table>

Figure 1: Distribution of Depressive Symptoms according to CDI scores (n=85)

Conclusions

Findings suggest that depression plays an important part as a moderator in the link between tic severity and functional impairment in children and adolescents. Our study highlights the importance of screening for and treating depression in patients with CTD.