

Examine the Effects of Atomoxetine Alone Versus Atomoxetine Combined with Risperidone at Sample of Egyptian Children Suffering from ADHD.

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ABSTRACT

Background: An estimated 7% of elementary school children suffer from Attention Deficit Hyperactivity Disorder (ADHD), a mental neuro-developmental condition marked by impulsivity, hyperactivity, and lack of attention. Atomoxetine is one of the most important medications for ADHD however Risperidone has been used as a label for the treatment of ADHD.

Aim: To study the Efficacy of Atomoxetine alone vs. Atomoxetine with Antipsychotic (Risperidone) in ADHD children.

Subjects and Methods: 54 Egyptian children with ADHD, ranging in age from 6 to 18. They meet the DSM-IV criteria for ADHD and have been receiving therapy at Al Hussian Hospital's psychiatry clinic. Conner's 2 scale was used to evaluate each patient for ADHD. Between January and June of 2024, a study was carried out on all children receiving therapy for all forms of ADHD using either Atomoxetine alone or in combination with an antipsychotic (Risperidone).

Results: When Atomoxetine was administered to 27 children, it demonstrated a moderate level of efficacy in 12 of 27 patients (44.4%) for all children with ADHD, regardless of type, but it significantly improved the inattention type of ADHD in 4 from 4 patients (100%).

Given to 27 children, the combination of Atomoxetine and Risperidone demonstrated a greater effect on 24 of 27 patients with (88.9%) for all ADHD children, and it showed a discernible improvement on 9 out of 9 with (100%) for ADHD hyperactivity type.

Conclusion: Patients with Attention deficit variant responded well to Atomoxetine., Patients with attention-deficit/hyperactivity variant responded well to Atomoxetine/Antipsychotic (Risperidone) combination., Patients with Hyperactivity variants show good responses to Antipsychotics (Risperidone)., All types of ADHD are responsive to Atomoxetine or Atomoxetine / Antipsychotic (Risperidone) combination, But the Atomoxetine effect is more on the Attention deficit variant than other variants, while Antipsychotic (Risperidone) is more effective on hyperactivity and aggression.

Keywords: ADHD, Atomoxetine, Risperidone

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INTRODUCTION

A frequent developmental condition of inattention that may or may not be accompanied by hyperactivity is known as attention deficit hyperactivity disorder.¹

One's inability to focus, excessive activity, and behavior that is inappropriate for their age, all of these traits are indicative of ADHD.²

The data for Atomoxetine indicates that it is safe and effective in treating ADHD in children and teenagers.³ For kids and teenagers with disruptive behaviors, ADHD, and developmental disorders, Risperidone may be a safe,

effective medication. Numerous investigations have demonstrated the high effectiveness of risperidone.⁴

MATERIALS AND METHODS

Study Settings

This follow-up study was carried out from January to June 2024 on 54 ADHD children (6–18 years old) who were receiving treatment at the psychiatry clinic at Al Hussian University Hospital in Cairo, Egypt.

Table 1: Attention deficit and Hyperactivity and demographic data

	Hyperactivity/Attention deficit						χ^2	p
	Hyperactivity		Attention deficit		Mixed type			
	(n = 18)		(n= 8)		(n = 34)			
	No.	%	No.	%	No.	%		
Age (years)								
From 12 to 18 years	0	0.0	0	0.0	6	17.6	6.658	$MC_p=$ 0.117
From 7 to 12 years	2	11.1	3	37.5	7	20.6		
Less than 7 years	16	88.9	5	62.5	21	61.8		
Gender								
Female	3	16.7	2	25.0	12	35.3	2.062	0.357
Male	15	83.3	6	75.0	22	64.7		
Residence								
Urban	13	72.2	8	100.0	7	20.6	23.957 *	$MC_p=$ <0.001*
Rural	5	27.8	0	0.0	27	79.4		

Table 2: Comorbid conditions and demographic data relationship.

	Comorbid conditions						χ^2	p
	No (n = 10)		conducted (n= 20)		ODD (n = 30)			
	No.	%	No.	%	No.	%		
Age (years)							9.979*	$MCp=$ 0.026*
From 12 to 18 years	0	0.0	0	0.0	6	20.0		
From 7 to 12 years	0	0.0	4	20.0	8	26.7		
Less than 7 years	10	100.0	16	80.0	16	53.3		
Gender							10.670*	0.005*
Female	0	0.0	3	15.0	14	46.7		
Male	10	100.0	17	85.0	16	53.3		
Residence							2.472	0.290
Urban	6	60.0	11	55.0	11	36.7		
Rural	4	40.0	9	45.0	19	63.3		
Education							12.173*	$MCp=$ 0.009*
Above average	5	50.0	4	20.0	1	3.3		
Average	0	0.0	5	25.0	7	23.3		
Below average	5	50.0	11	55.0	22	73.3		

Table 3: Relation of Attention-deficit/ Hyperactivity and comorbid conditions.

	ADHD						χ^2	$_{MC}p$
	Hyperactivity type (n = 18)		Inattention type (n = 8)		Mixed type (n = 34)			
	No.	%	No.	%	No.	%		
Comorbid conditions								
No	5	27.8	0	0.0	5	14.7	13.003*	0.007*
Conducted	10	55.6	3	37.5	7	20.6		
ODD	3	16.7	5	62.5	22	64.7		

This study was authorized by the Al-Azhar Faculty of Medicine's Ethical Committee.

Following an explanation of the purpose of the study and the acquisition of verbal agreement, all children underwent semi-structured clinical interviews and were excluded from other psychiatric & medical conditions.

Procedures

Based on the DSM IV criteria, ADHD has been diagnosed in all of the study children. Conner's 2 test for ADHD, or SCID, was used for every child in the study.

Implementing medicinal treatment for every child and monitoring their progress, who were divided into two groups:

The first group, which consisted of 27 children diagnosed

Table 4: Comparison between Atomoxetine and Atomoxetine/Risperidone according to Attention-deficit /Hyperactivity.

Hyperactivity and Attentiondeficit	Atomoxetine		Atomoxetine /Risperidone		χ^2	MC _p
	No.	%	No.	%		
Overall	12/27	44.4	24/27	88.9	17.417*	<0.001*
Hyperactivity type	2/9	22.2	9/9	100.0	12.021	0.001*
Attention deficit type	4/4	100.0	3/4	75.0	5.085	0.135
Mixed type	6/14	42.9	12/14	85.7	8.123*	0.010*

with ADHD children, received only Atomoxetine, independent of the kind of ADHD.

In contrast, 27 recently diagnosed children with ADHD, irrespective of their kind of ADHD, received a combination of Atomoxetine and antipsychotic (Risperidone) medication in the second group.

Statistical Analysis

SPSS 20.0 was employed. The qualitative data were expressed in terms of percentages and figures, and the significance of the outcomes was assessed at the 5% level.

RESULTS

54 children with ADHD were included in the study; 70 percent of them were younger than 7 years old, 71.7% of them were male, 28.3% were female, and 53.3% of them were in rural locations. Based on study statistics, the mixed form of ADHD was the preponderance kind, with 56.7% of participants having ADHD. Oppositional defiant disorder (ODD) is a comorbid disorder. Table 1 of the study indicates a strong statistical correlation (P value<0.001) between the combined type of ADHD and the individuals' educational attainment. Comorbid conditions and male children with ADHD were shown to have a high statistical significance (P <0.005) in Table 2, as was age less than 7 years old (P =0.026) in Table 2.

There was strong significance between the ADHD children and the Comorbid conditions with them (P <0.007) Table 3.

The results of the study's analysis demonstrated that children with ADHD, irrespective of their kind, improved with treatment. (P <0.001). Table 4 Furthermore, the research demonstrated a strong statistical correlation between children with ADHD hyperactivity type and their improvement when prescribed a combination of Atomoxetine and Risperidone. (P =0.001). Table 4 Furthermore, a strong statistical correlation was observed between the improvement of children with ADHD mixed type and the combination of Atomoxetine and Risperidone. (P =0.010). Table 4

DISCUSSION

In this study, we conducted a follow-up investigation based on the use of Atomoxetine and the Atomoxetine/Antipsychotic (Risperidone) combination for the treatment of all forms of ADHD. In this study, 54 newly

diagnosed cases of ADHD were examined. According to the study's results, the ADHD mixed type predominated with a 56.7% rate. These findings were consistent with the findings of Socanski's study, which also indicated that the ADHD mixed type was common.⁵

According to the study, ODD (Oppositional defiant disorder) is the most prevalent comorbidity with ADHD, occurring in 30–67% of children with the disorder.⁶ Furthermore, 79.4% of children with ADHD who lived in rural areas were found to have a higher incidence of ADHD mixed type than children who lived in urban areas, indicating a significant statistical correlation. These results aligned with those published by Willcutt EG, who discovered that 48% of all cases in his investigation occurred in rural regions.⁷ In line with Masi's study, which discovered that over two-thirds of ADHD children have a comorbid disorder in early childhood, the current study also found a very high statistically significant relationship between comorbid conditions and the age of ADHD children, with comorbid disorders being more common in children under the age of seven.⁸ A follow-up study was carried out based on the treatment, and the results showed that, in the first group of 27 patients, improvement was observed in all cases with ADHD lack of attention variant 100%, only in 22.2% of cases with ADHD hyperactivity variant, and in 42.9% of cases with ADHD mixed variant. This group of patients received only Atomoxetine, regardless of the type of ADHD. These results imply that Atomoxetine is more effective in treating the inattention type of ADHD than the hyperactive variant. These results were in line with a study by Vinutha and a colleague that showed Atomoxetine to be much more effective at treating inattention than hyperactivity or impulsivity.⁹ No matter which kind of ADHD the second group of 27 patients in the current study received, they all showed improvement: 100% of patients with ADHD hyperactivity type, 75% of patients with ADHD inattention type, and 85.7% of patients with ADHD mixed type showed improvement. These results imply that the antipsychotic Risperidone is successful at controlling the various forms of ADHD, particularly the hyperactivity type. These results are consistent with several studies that showed antipsychotics had a significant positive impact on impulsivity, aggression, hyperactivity, and agitation in all research groups.^{10, 11}

CONCLUSION

Patients with an Attention deficit variant responded well to Atomoxetine.

Patients with attention-deficit/hyperactivity variant responded well to the Atomoxetine/Antipsychotic (Risperidone) combination. The patient with the

Hyperactivity variant shows a good response to Antipsychotics (Risperidone).

All types of ADHD are responsive to Atomoxetine or Atomoxetine / Antipsychotic (Risperidone) combination, But the Atomoxetine effect is more on Attention deficit variant than other variants, while Antipsychotic (Risperidone) is more effective on hyperactivity and aggression.

Declaration of Interest

The authors report no conflict of interest

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