Research Article

it Medical Team
www.itmedicalteam.pl

Journal of Neurology and Neuroscience
ISSN 2171-6625

2025
Vol.16 No.1:001

Comparison of Risperidone and Aripiprazole for the Treatment of Irritability Associated with Autism Spectrum Disorder

Gopen Kumar Kundu*, Sadia Sultana, Choudhury Rehnuma Tabassum and Ishrat Zahan Nigar

Department of Paediatric Neurology, Bangabandhu Sheikh Mujib Medical University, Dhaka, Bangladesh

***Corresponding author:** Gopen Kumar Kundu, Department of Paediatric Neurology, Bangabandhu Sheikh Mujib Medical University, Dhaka, Bangladesh, Tel: 01718590768; E-mail: gopen.kundu@gmail.com

Received date: Jul 22, 2023, Manuscript No. IPJNN-23-13962; **Editor assigned date:** Jul 25, 2023, PreQC No. IPJNN-23-13962 (PQ); **Reviewed date:** Aug 09, 2023, QC No. IPJNN-23-13962; **Revised date:** Jan 22, 2025, Manuscript No. IPJNN-23-13962 (R); **Published date:** Jan 29, 2024

Citation: Kundu GK, Sultana S, Tabassum CR, Nigar IZ (2025) Comparison of Risperidone and Aripiprazole for the Treatment of Irritability Associated with Autism Spectrum Disorder. J Neurol Neurosci Vol:16 No:1

Abstract

Background: Autism Spectrum Disorder (ASD) is a complex neurodevelopmental disorder with high heterogeneity. While the symptoms of ASD can manifest before 2 years of age, they usually become more apparent between 2 and 3 years of age. Patients with ASD are all unique in their presentation; however, the disorder is characterized by core symptoms that include impairments in social interaction and communication, as well as the presence of restricted and repetitive behaviors. Risperidone and aripiprazole are most commonly used drugs for the treatment of irritability and aggressive behaviour in children with autism spectrum disorder.

Objective: To compare the efficacy and safety of risperidone and aripiprazole for the management of core symptoms of children with ASD.

Materials and methods: This prospective interventional study was conducted in Institute of Pediatric Neuro disorder and Autism (IPNA) and department of paediatric neurology, Bangabandhu Sheikh Mujib Medical University, Dhaka from October 2019 to September 2020.

Children age 3 to 6 years, who fulfilled the diagnostic criteria of ASD according to the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-V) were included in this study. The study populations were divided into two groups: Group I-children on risperidone and group II-children on aripiprazole. After getting informed written consent from the parents, the study subjects, (group-1) and (group-II) were treated with risperidone and aripiprazole respectively. At the beginning of the treatment, all ASD children were assessed clinically and then ASD diagnostic tool, Autism Diagnostic Check List (ADCL) were administered to see the behavior score of children.

Results: In this study, the mean age was 3.96 ± 1.7 years in risperidone group and 3.55 ± 0.98 years in aripiprazole group. Majority (96.0%) child were male in risperidon group and 84.0% in aripiprazole group. Almost two third (64.0%) fathers education level was bachelor degree and above in risperidon group and 18 (72.0%) in aripiprazole group. Almost half (44.0%) mothers education level was bachelor degree and above in risperidon group and 13 (52.0%) in aripiprazole group. Almost one third (32.0%) fathers were non-government service both groups. Majority (96.0%) mothers were housewife in risperidone group and 22 (88.0%) in aripiprazole group. After treatment ADCL score were decreased almost two third (64.0%) of the study subjects in risperidon group and 11 (44.0%) in aripiprazole group.

Conclusion: The core symptoms of ASD reduced almost three fourth subjects such as improve sleep, reduced hyperactivity and increased attention in the risperidone group which is much higher than aripiprazole group. It was statistically significant ($p>0.05$) Majority subjects had increased appetite in risperidone group and increased sleepiness in the aripiprazole group and It was also statistically significant ($p>0.05$) .

Keywords: ASD; Risperidone; Aripiprazole; Irritability

Introduction

Autism Spectrum Disorder (ASD) is a complex neurodevelopmental disorders with a heterogeneous spectrum of clinical symptomatology related to social interaction and communication [1]. ASD is characterized by three core symptoms, persistent impairments in reciprocal social interaction and communication across multiple contexts, along with the presence of restricted, repetitive and stereotyped behaviors and interests. It appears in children within the first three years of life during maximum neuronal development of a child. In Bangladesh the number of autism is increasing day by day but still risk factors of autism are not clearly identified.

The center for disease control and prevention report indicates that the prevalence of ASD is one in 88 children with a 4.6:1 male to female ratio. According to the autism and developmental disabilities monitoring network, in 2000, the prevalence of ASD children was found to be 1 in 150 children, in 2008 it was found to be 1 in 88 children, and in 2010 the prevalence was 1 in 68 children [2]. In Bangladesh the overall prevalence rate for ASD is 1.55/1000 and in rural populations it is 0.68/1000 and in Dhaka city 30/1000 [3].

The pathophysiological etiologies which precipitate autism symptoms remain elusive and controversial in many cases, but

both genetic and environmental factors have been implicated. Evidence now suggests that the environment may play a significant role in triggering autism, probably not on its own but through a complex interaction with genetic susceptibilities [4].

In addition to core symptoms, children with autism frequently have serious behavioral disturbances, such as self-injurious behavior, aggression and tantrums in response to routine environmental demands [5]. These behavioral problems interfere with rehabilitative efforts and pose enormous challenges to parents and educators. Although behavior therapy may reduce aggression and self-injury, it tends to be highly individualized and has not been evaluated in randomized clinical trials [6]. To date, only haloperidol, a potent postsynaptic dopamine receptor antagonist, has been shown in more than one study to be superior to placebo for the treatment of serious behavioral problems [7,8]. However, many clinicians avoid using haloperidol in children because of concern about its short and long term side effects [9].

Aripiprazole and risperidone are the only FDA approved medications for treating irritability in autistic disorder, however there is no head to head data comparing these agents.

Risperidone, atypical antipsychotic drug, is a very effective treatment for psychiatric illness and ADHD in children [10]. It is also used in children with autism to reduced behavior symptoms but common adverse effects are weight gain, increase appetite and sleepiness [11].

Aripiprazole has a unique pharmacological profile, as a partial agonist at the dopamine D_2 and serotonin 5HT1A receptors and an antagonist at the serotonin 5HT2A receptor. This drug has few side effects such as extra pyramidal syndrome, weight gain, metabolic disorders and sedation, which are common problems with other antipsychotic drugs. Efficacy and tolerability of aripiprazole in children and adolescents have been well-demonstrated in many clinical setting such as schizophrenia, bipolar diseases and irritability associated with autistic disorder in children and adolescents [12].

This study will be conducted to compare the efficacy and safety of risperidone and aripiprazole in the treatment of irritability of children with autism.

Relevance of the project to national development: Autism Spectrum Disorder (ASD) is a complex neurodevelopmental disorder where there are qualitative impairments in reciprocal social interaction and communication across multiple contexts, along with the presence of restricted, repetitive and stereotyped behaviors and interests. In Bangladesh the number of autism is increasing day by day but still risk factors of autism are not clearly identified. The pathophysiological etiologies which precipitate autism symptoms are not clear till now. But both genetic and environmental factors have been implicated. Children with autism frequently have serious behavioral disturbances, such as self-injurious behavior, aggression and tantrums in response to routine environmental demands. Aripiprazole and risperidone are FDA approved medications for treating irritability in autistic disorders. Both drugs are used in children with autism to reduce behavioral symptoms but they have some common untoward effects and sometimes exacerbate the symptoms. These facts prompted us to make an effort to clarify the status of commonly used agents like risperidone and aripiprazole with regard to their efficacy and tolerability during use in children with autism.

Objectives

To compare the efficacy and safety of risperidone and aripiprazole for the management of core symptoms of children with ASD.

Specific:

- To see the efficacy of risperidone for the treatment of behavior symptoms in children with ASD.
- To see the efficacy of aripiprazole for the treatment of behavior symptoms in children with ASD.
- To see the adverse effects of risperidone and aripiprazole during the treatment of children with ASD.
- To compare the efficacy of risperidone and aripiprazole for the management of core symptoms of children with ASD.

Materials and Methods

This prospective interventional study was conducted in department of paediatric neurology, Bangabandhu Sheikh Mujib Medical University, Dhaka from October 2019 to September 2020.

Children age 3 to 6 years, who fulfilled the diagnostic criteria of ASD according to the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-V) were included in this study. Children with mental retardation or other developmental disorders such as ADHD, chronic physical, or neurological illness, or those receiving other psychotropic drugs were excluded from the study. The study populations were divided into two groups: Group I-children on risperidone and group II-children on aripiprazole. At the beginning of the treatment, all ASD children were assessed clinically and then Autism Diagnostic Checklist (ADCL) tool were administered to see the behavior score of children. After getting informed written consent from the parents, the study subjects, (group-1) and (group-II) were treated with risperidone and aripiprazole respectively. Treatment were initiated with 0.25 mg risperidone once daily, increased by 0.25 mg weekly, to a maximum dose 2 mg/day in group I children and 2.5 mg aripiprazole, increased by 2.5 mg weekly, to a maximum dose of 10 mg/day in group II children. Treatment was continued for up to eight weeks. Then at 2^{nd}, 4^{th} and 8^{th} weeks of treatment, ADCL were readministered to see the behavior score of autistic children. Subsequently two ADCL reports were compared. Adverse effects of two drugs were evaluated

The data were analyzed by SPSS statistics software IBM and the mean score (standard deviation) of variables was calculated. Then, mean scores between the two groups were compared by unpaired t-test and *Chi square* test.

Results

Table 1 shows the comparison of risperidone and aripiprazole to reduce irritability of ASD. The mean age was 3.96 ± 1.7 years in the risperidone group and 3.55 ± 0.98 years in the aripiprazole group. Majority (96.0%) children were male in the risperidone group and 21 (84.0%) in the aripiprazole group. Majority (80.0%) child place of birth was urban area in both groups. The mean fathers age was 40.21 ± 9.25 years in the risperidone group and 37.44 ± 6.56 years in the aripiprazole group. The mean mothers age was 32.54 ± 7.21 years in the risperidone group and 31.44 ± 5.08 years in the aripiprazole group. Almost two third (64.0%) fathers education level was bachelor and above in the risperidone group and 18 (72.0%) in the aripiprazole group. Almost half (44.0%) of mothers' education level was bachelor and above in the risperidone group and 13 (52.0%) in the aripiprazole group. Almost one third (32.0%) fathers were non-government service both groups. Majority (96.0%) mothers were housewives in the risperidone group and 22 (88.0%) in the aripiprazole group. The difference was not statistically significant (p>0.05) between two groups.

Table 1: Comparison of risperidone and aripiprazole to reduce irritability of ASD (n=50).

General particulars of child	Risperidone group (n=25)		Aripiprazole group (n=25)		P value
	n	n	n	%	
Mean ± SD	3.96 ± 1.7		3.55 ± 0.98	[a]0.301[ns]	
Range (Min-max)	2.3-10.58		2-7		
Gender					
Male	24	96	21	84	[b]0.157[ns]
Female	1	4	4	16	
Place of birth					
Rural	5	20	5	20	[b]1.00[ns]
Urban	20	80	20	80	
Fathers age in years					
Mean ± SD	40.21 ± 9.25		37.44 ± 6.56		[a]0.073[ns]
Range (Min-max)	30-62		30-62		
Mothers age in years					
Mean ± SD	32.54 ± 7.21		31.44 ± 5.08		[a]0.535[ns]
Range (Min-max)	20-46		24-44		
Father education					
<SSC	5	20	3	12	[b]0.734[ns]
SSC and HSC	4	16	4	16	
Bachelor and above	16	64	18	72	
Mother education					
<SSC	7	28	2	8	[b]0.176[ns]
SSC and HSC	7	28	10	40	
Bachelor and above	11	44	13	52	

Father occupation					
Government service	8	32	2	8	[b]0.180[ns]
Non-government service	8	32	8	32	
Business	6	24	12	48	
Laborer	2	8	1	4	
Others	1	4	2	8	
Mother occupation					
Government service	1	4	2	8	[b]0.491[ns]
Non-government service	0	0	1	4	
Housewife	24	96	22	88	
Note: ns=not significant; [a]p value reached from unpaired t-test; [b]p value reached from *Chi square* test					

Table 2 shows the distribution of the study subjects by family income per month. It was observed that more than one third (36.0%) of subjects 'family income per month was TK. (10,000-<25,000) in the risperidone group and 5 (20.0%) in the aripiprazole group. The difference was not statistically significant (p>0.05) between two groups.

Table 2: Distribution of the study subjects by family income per month (n=50).

Family income per month	**Risperidone group (n=25)**		**Aripiprazole group (n=25)**		**P value**
	n	**%**	**n**	**%**	
TK. (<10,000)	2	8	0	0	0.188[ns]
TK10,000-<25,000)	9	36	5	20	
TK. (25,000-50,000)	8	32	14	56	
TK. (>50,000)	6	24	6	24	
Note: ns=not significant; p value reached from *Chi square* test					

Table 3 shows the distribution of the study subjects by ADCL Score. It was observed that the majority (88.0%) subjects' ADCL score before treatment was mild in the risperidone group and 21 (84.0%) in the aripiprazole group. The difference was not statistically significant (p>0.05) between two groups. After treatment ADCL score decreased almost two third (64.0%) of the study subjects in the risperidone group and 11 (44.0%) in the aripiprazole group. The differences of ADCL score after treatment was statistically significant (p<0.05) between two groups.

Table 3: Distribution of the study subjects by ADCL score (n=50).

ADCL score	**Risperidone group (n=25)**	**Aripiprazole group (n=25)**	**P value**

	n	%	n	%	
Before treatment					
Mild	22	88	21	84	0.683^{ns}
Moderate	3	12	4	16	
After treatment					
Decreased	16	64	11	44	0.044^{s}
Increased	5	20	2	8	
Static	4	16	12	48	
Note: s: significant; ns: not significant; P value reached from *Chi square* test					

Table 4 shows the distribution of the study subjects by reduction of irritability response. It was observed that almost three fourth (72.0%) subjects had partial response in the risperidone group and 8 (32.0%) in the aripiprazole group. The difference was statistically significant (p<0.05) between two groups.

Table 4: Distribution of the study subjects by reduction of irritability response (n=50).

Response	Risperidone group (n=25)		Aripiprazole group (n=25)		P value
	n	%	n	%	
Partial	18	72	8	32	0.006^{s}
Complete	1	4	0	0	
No response	6	24	17	68	
Note: s=significant; P value reached from *Chi-square* test					

Table 5 shows the comparison of study subjects by improvement of other symptoms. It was observed that almost three fourth (72.0%) subjects had reduced hyperactivity in the risperidone group and 9 (36.0%) in the aripiprazole group. The differences of reduced hyperactivity, improved sleep, increased attention and no improvement were statistically significant (p<0.05) between two groups.

Table 5: Comparison of study subjects by improvement of other symptoms (n=50).

Improvement of others symptom	Risperidone group (n=25)		Aripiprazole group (n=25)		P value
	n	%	n	%	
Reduced hyperactivity	18	72	9	36	0.010^{s}
Improved sleep	8	32	0	0	0.002^{s}
Reduced aggressive behavior	1	4	1	4	1.00n^{s}
Increased attention	9	36	1	4	0.004^{s}

No Improvement	6	24	16	64	0.004[s]
Note: s=significant; ns=not significant; P value reached from *Chi-square* test					

Table 6 shows the distribution of the study subjects by adverse effects. It was observed that three (12.0%) subjects had increased sleepiness in the risperidone group and 12 (48.0%) in the aripiprazole group and it was statistically significant (p<0.05) between two groups. Five (20.0%) subjects had increased appetite in the risperidone group but no one in aripiprazole group and it was statistically significant (p<0.05) between two groups.

Table 6: Distribution of the study subjects by adverse effects (n=50).

Side effects	Risperidone group (n=25)		Aripiprazole group (n=25)		P value
	n	%	n	%	
Sleepiness	3	12	12	48	0.005[s]
Agitation	0	0	0	0	-
Drowsiness	2	8	0	0	0.148n[s]
Increase appetite	5	20	0	0	0.018[s]
Obesity	0	0	0	0	-
No side effects	15	60	13	52	0.568[ns]
Note: s=significant; ns=not significant; P value reached from *Chi-square* test					

Discussion

In this study, the mean age was 3.96 ± 1.7 years in risperidon group and 3.55 ± 0.98 years in aripiprazole group. Majority (96.0%) child were male in risperidon group and 21 (84.0%) in aripiprazole group. Majority (80.0%) child place of birth was urban area in both groups. The mean father's age was 40.21 ± 9.25 years in risperidon group and 37.44 ± 6.56 years in aripiprazole group. The mean mother's age was 32.54 ± 7.21 years in the risperidone group and 31.44 ± 5.08 years in the aripiprazole group. Almost two third (64.0%) fathers education level was bachelor and above in the risperidone group and 18 (72.0%) in the aripiprazole group. Almost half (44.0%) mothers' education level was bachelor and above in the risperidone group and 13 (52.0%) in the aripiprazole group. Almost one third (32.0%) fathers were non-govt. service in both groups. Majority (96.0%) mothers were housewives in the risperidone group and 22 (88.0%) in the aripiprazole group. The difference was not statistically significant (p>0.05) between two groups. In accordance with our study, Mandell, et al. reported that the average age of diagnosis was 3.1 years for children with autistic disorder, 3.9 years for pervasive developmental disorder not otherwise specified [13]. The average age of diagnosis increased 0.2 years for each year of age. They also observed that rural children received a diagnosis 0.4 years later than urban children and near poor children received a diagnosis 0.9 years later than those with incomes >100% above the poverty level. Sandin, et al. reported that advancing paternal and maternal age were each associated with increased RR of ASD after adjusting for confounding and the other parent's age [14]. Younger maternal age was also associated with increased risk for ASD (mothers <20 years *vs.* 20–29 years, RR=1.18 (95% CI: 1.08–1.29), P-value<0.001). There was a joint effect of maternal and paternal age with increasing risk of ASD for couples with increasing differences in parental ages. In a study, Raina, et al. reported that a higher proportion of male children (0.2%) were identified as cases of ASD as compared to females (0.1%) which are comparable to our study [15]. Loomes, et al. reported that of children meeting criteria for ASD, the true male to female ratio is not 4:1, as is often assumed; rather, it is closer to 3:1 [16]. There appears to be a diagnostic gender bias, meaning that girls who meet criteria for ASD are at disproportionate risk of not receiving a clinical diagnosis. Many studies, mostly American and Australian, have demonstrated an inverse relationship to that usually observed for other health conditions, with a tendency to an increased prevalence of ASD among households with higher SES as measured by parental educational level or ecological indicators of household income [17,18]. Raina, et al. found that upper socioeconomic group of head of family/father had a higher risk of getting diagnosed as autism as compared to lower socioeconomic group (OR; 95% CI-3.23; 0.24–44.28, P=0.38). In Bangladesh, Afrin, et al. showed the percentage of the educational qualification of mothers of children with autism [19]. They observed the percentage of mothers below S. S. C. is 18.0%, in S.S.C. level is 22.0%, below H. S. C is 20.0%, in H. S. C. level is 11.0%, in graduation level is 18.0%, in post-graduation

level is 4.0% and others are 7% whereas percentage of fathers below S. S. C. is 10.0%, in S.S.C. level is 6.0%, below H. S. C is 9.0%, in H. S. C. level is 21.0%, in graduation level is 25.0%, in post-graduation level is 13.0% and others are 16%. Chiang, et al. stated that advanced maternal age had a higher association with the diagnosis of ASD and maternal educational disparity was found between ASD clinical diagnosis and community screening. In addition, community and primary medical care services should pay more attention to children of parents with lower education during ASD screening to prevent delayed diagnosis [20].

In our study, regarding the distribution of the study subjects by family income per month, it was observed that more than one third (36.0%) subjects family income per month was TK. (10,000-<25,000) in risperidon group and 5 (20.0%) in aripiprazole group. The difference was not statistically significant ($p>0.05$) between two groups. Afrin, et al. showed that 1% children's family income is below 1000, 10.0% children's family income is in 1000-5000 thousand, 13.0% children's family income is in 5001-10000 thousand, 8.0% children's family income is in 10001-15000 thousand, 16.0% children's family income is in 15001-20000 thousand, 16.0% children's family income is in 20001-30000 thousand, 8.0% children's family income is in 30001-40000 thousand, 14.0% children's family income is in 40001-50000 thousand, 14.0% children's family income is above 50001 thousand.

In the current study, the distribution of the study subjects by ADCL score showed that the majority (88.0%) subjects' ADCL score before treatment was mild in the risperidone group and 21 (84.0%) in the aripiprazole group. The difference was not statistically significant ($p>0.05$) between two groups. After treatment ADCL score decreased almost two third (64.0%) of the study subjects in the risperidone group and 11 (44.0%) in the aripiprazole group. The differences of ADCL score after treatment was statistically significant ($p<0.05$) between two groups. In a study, Alam, et al. determined the reliability and validity of autistic diagnostic checklist. There were 60 items which were categorized in six sub groups, namely general observation, cognition, emotion, social, communication, sensory deficiency. Results showed that Cronbach Alpha of the total scale was 92. Validation of the scale was assured by convergent validity. Finally, the six sub-groups seemed to be uniformly important in the understanding of autism symptoms.

In this study, regarding the distribution of the study subjects by reduction of irritability response, it was observed that almost three fourth (72.0%) subjects had partial response in the risperidone group and 8 (32.0%) in the aripiprazole group. The difference was statistically significant ($p<0.05$) between two groups. Although there are no approved pharmacologic treatments that target the core deficits of ASD, associated comorbid symptoms such as irritability may be ameliorated by a combination of behavioral and pharmacologic approaches, including the use of atypical antipsychotics. Risperidone and aripiprazole are approved by the US Food and Drug Administration for the treatment of pediatric patients with irritability associated with ASD. Blankenship, et al. reported that in clinical practice, aripiprazole has been effective in decreasing irritability and aggression in those older than 17 years. However, dosing guidelines for those older than 17 years have not been approved by the FDA. Aripiprazole was directly compared with risperidone in a 2-month double blind, randomized trial. Both medications decreased the ABC-I scores. Although aripiprazole reduced the symptoms of irritability faster than risperidone, the overall effects on the ABC-I scores were similar in both groups.

In our study, the distribution of the study subjects by side effects showed that three (12.0%) subjects had increased sleepiness in the risperidone group and 12 (48.0%) in the aripiprazole group and it was statistically significant ($p<0.05$) between two groups. Five (20.0%) subjects had increased appetite in the risperidone group and none in the aripiprazole group and it was statistically significant ($p<0.05$) between two groups. In a study, Farmer and Aman reported that like risperidone, aripiprazole may cause a degree of somnolence in many children with ASDs. As numerous young people with ASD experience sleep disorder, this side effect can often be used to advantage by strategic timing of dosing. Occasional activation with aripiprazole may be a disadvantage in many children with ASD; this can often be avoided by starting with 2 mg/day for at least a week and by dosing in the morning if necessary. In a very small percentage of children treated with risperidone, initial daytime somnolence does not seem to decline with passage of time; such children may benefit by a trial of aripiprazole. Weight gain is often a common concern for patients and families when choosing an antipsychotic medication. Although aripiprazole is usually not associated with significant weight gain in typically developing youth's increases in body mass index were similar for aripiprazole and risperidone in children with ASD. Farmer and Aman, reported that Risperidone, like other atypical antipsychotics, was associated with increased prolactin and significant weight gain, so there was sufficient impetus to identify another treatment with a side effect profile that may be more favorable for such patients.

In this study, regarding the comparison of study subjects by improvement of others' symptoms, it was observed that almost three fourth (72.0%) subjects had reduced hyperactivity in the risperidone group and 9 (36.0%) in the aripiprazole group. The differences of reduced hyperactivity, improved sleep, increased attention and no improvement were statistically significant ($p<0.05$) between two groups. Hirsch and Pringsheim reported that after a short term medication intervention with aripiprazole, children/adolescents showed less irritability and hyperactivity and fewer stereotypies (repetitive, purposeless actions). However, notable side effects, such as weight gain, sedation, drooling and tremor, must be considered. In a meta-analysis, Dale, et al. found antipsychotics for children and adolescents with ASD more efficacious than placebo in reducing stereotypies, hyperactivity, irritability and obsessions, compulsions and in increasing social communication and global functioning. Antipsychotics were also found to be more acceptable, but less safe than placebo. Alsayouf, et al. reported that the chronic administration of antipsychotic medications with or without ADHD medications is well tolerated and efficacious in the treatment of ASD core and comorbid symptoms in younger children when combined with standard supportive therapies.

Conclusion

Our study showed that core symptoms of ASD reduced almost three fourth subjects such as improve sleep, reduced hyperactivity, and increased attention in the risperidone group which was much higher than aripiprazole group. It was statistically significant ($p>0.05$). Majority subjects had increased appetite in risperidone group and increased sleepiness in the aripiprazole group and It was also statistically significant ($p>0.05$).

Our findings suggest that anti-psychotic medication started early in life can potentially eliminate the core symptoms of ASD. However, notable side effects, such as weight gain, sedation, drooling and tremor, must be considered.

Currently, there are no medications approved for the management of core symptoms of ASD; however, a psycho pharmacological approach may be beneficial in the treatment of associated symptoms that can substantially and adversely impact the life of children with ASD.

Limitation of this Study

- Small sample size.
- Samples collected from one hospital with a short duration.

Recommendation

There is a great need for further research on the safety and efficacy of existing psychotropic medications in children with ASD, as well as the development of new therapeutic modalities for the core and associated behavioral symptoms.

It is hoped that sufficiently powered, double-blind, and placebo-controlled trials will be conducted in the future to verify these findings in this pediatric population.

References

1. Sadock BJ, Kaplan HI, Sadock VA, Ruiz P (2009) Kaplan and Sadock's Comprehensive Textbook of Psychiatry. 9th edition. Lippincott Williams and Wilkins, Philadelphia.
2. Kogan MD, Blumberg SJ, Schieve LA, Boyle CA, Perrin JM, et al. (2009) Prevalence of parent-reported diagnosis of autism spectrum disorder among children in the US, 2007. Pediatrics 124:1395-1403
3. Duan XY, Jia FY, Jiang HY (2013) Relationship between vitamin D and autism spectrum disorder. Zhongguo Dang Dai Er Ke Za Zhi 15:698-702
4. Fombonne E, Du Mazaubrun C (1992) Prevalence of infantile autism in four French regions. Soc Psychiatry Psychiatr Epidemiol 27:203-210
5. Schreibman L (2000) Intensive behavioral/psychoeducational treatments for autism: Research needs and future directions. J Autism Dev Disord 30:373-378
6. Anderson LT, Campbell M, Adams P, Small AM, Perry R, et al. (1989) The effects of haloperidol on discrimination learning and behavioral symptoms in autistic children. J Autism Dev Disord 19:227-239
7. Perry R, Small AM, Green WH, Perry R, Small AM, et al. (1984) Haloperidol in the treatment of infantile autism: effects on learning and behavioral symptoms. Am J Psychiatry 141:1195-1202
8. Campbell M, Armenteros JL, Malone RP, Adams PB, Eisenberg ZW, et al. (1997) Neuroleptic-related dyskinesias in autistic children: A prospective, longitudinal study. J Am Acad Child Adolesc Psychiatry 36:835-843
9. Coskun M, Zoroglu SS, Ozturk M (2011) Risperidone treatment in preschool children with disruptive behavior disorders: A chart review study. J Clin Psychopharmacol 21:33-41
10. Luby J, Mrakotsky C, Stalets MM, Belden A, Heffelfinger A, et al. (2006) Risperidone in preschool children with autistic spectrum disorders: An investigation of safety and efficacy. J Child Adolesc Psychopharmacol 16:575-587
11. Masi G, Gagliano A, Siracusano R, Berloffa S, Calarese T, et al. (2012) Aripiprazole in children with Tourette's disorder and co morbid attention deficit/hyperactivity disorder: A 12 week, open label, preliminary study. J Child Adolesc Psychopharmacol 22:120-125
12. Mandell DS, Novak MM, Zubritsky CD (2005) Factors associated with age of diagnosis among children with autism spectrum disorders. Pediatrics 116:1480-1486
13. Sandin S, Schendel D, Magnusson P, Hultman C, Suren P, et al. (2016) Autism risk associated with parental age and with increasing difference in age between the parents. Mol Psychiatry 21:693-700
14. Raina SK, Chander V, Bhardwaj AK, Kumar D, Sharma S, et al. (2017) Prevalence of autism spectrum disorder among rural, urban and tribal children (1–10 years of age). J Neurosci Rural Pract 8:368-374
15. Loomes R, Hull L, Mandy WP (2017) What is the male to female ratio in autism spectrum disorder? A systematic review and meta analysis. J Am Acad Child Adolesc Psychiatr 56:466-474
16. Windham GC, Anderson MC, Croen LA, Smith KS, Collins J, et al. (2011) Birth prevalence of autism spectrum disorders in the San Francisco Bay area by demographic and ascertainment source characteristics. J Autism Dev Disord 41:1362-1372
17. Thomas P, Zahorodny W, Peng B, Kim S, Jani N, et al. (2012) The association of autism diagnosis with socioeconomic status. Autism 16:201-213
18. Afrin S, Mir Ayesha Akter, Sajani Akter, Tanmi Akhter, Shaheen Akhter (2017) Parental Educational Background and Socio Economic Status of ASD children in Bangladesh. J Psychiatr 2:9-14
19. Chiang TL, Lin SJ, Lee MC, Shu BC (2018) Advanced maternal age and maternal education disparity in children with autism spectrum disorder. Matern Child Health J 22:941-949
20. Alam SS, Kabir SM, Aktar R (2016) Reliability and validity of autistic diagnostic check list in Bangladesh. Int J Psychol Psychiatr 4:2-10