Original Paper

Factors Affecting Burden of Psychopharmacological Medication in Patients with Autism Spectrum Disorder: The Importance of Early Diagnosis

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ABSTRACT:

Factors affecting burden of psychopharmacological medication in patients with autism spectrum disorder: the importance of early diagnosis

Objective: The aim of the present study is to specify the frequency in psychopharmacological medication use in children with autism spectrum disorder (ASD) and determine their age range at diagnosis.

Methods: Five hundred and twenty three children with ASD who applied to Dr. Sami Ulus Maternity and Children Research and Training Hospital between 2010 -2015 were reviewed retrospectively. Data has been obtained from computerized hospital information system. Individuals with the diagnosis of Autism (F84.0), Atypical Autism (F84.1) and Pervasive Developmental Disorder Not Other Specified (F84.9) were screened.

Results: Psychotropic medication was recommended to 28.5% of the 523 children and adolescents diagnosed with ASD. Antipsychotics were the most common drugs of choice among psychotropic medications. The mean age at diagnosis of patients taking psychotropic medication was significantly higher than that of the patients who were not taking psychotropic medication ($t=-3.064$; $p<0.01$). The rate of psychotropic drug usage in female patients was significantly high than male patients ($\chi^2=6.675$; $p=0.01$).

Conclusion: The results of the present study suggest that the delay of diagnosis can be included as a factor for psychotropic medication need of patients with ASD. Nearly half of the patients have been diagnosed in the first three years of their life. For further benefits of studies in Turkey, evaluating the psychopharmacological drug prescription rate, age of diagnosis and related factors to determine the present situation of psychotropic medication in our country will be necessary.

Keywords: autism spectrum disorder, psychopharmacology, early diagnosis, burden of medication

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INTRODUCTION

Autism and the related disorders, recently named as 'Autism Spectrum Disorder' (ASD) are conditions characterized by early-onset impairments in social communication, repetitive behaviors, and restricted interests. Autism spectrum disorder affects more than 1% of the population and prevalence has been steadily increasing over time[1-4]. Early studies showed that

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ASD affects males 4-5 times more than females, although the difference is less prominent in individuals with intellectual disability[1,5,6]. However recent large-scale population-based studies and reviews suggest that the ratio in prevalence may be lower and independent from presence of intellectual disability[1,7].

Delays of critical developmental milestones (especially in development of spoken language) are the leading cause for initial evaluation[8]. Recently studies on early detection (at least aged <3 years) of children with ASD by using screening instruments support the fact that early diagnosis and intervention is associated with better prognosis[5,9-14].

There is no single, definitive treatment for ASD, but it has been shown that early intensive behavioral interventions can reduce core autistic symptoms and improve developmental outcomes[15]. The follow-up of individuals with ASD is complex and commonly includes behavioral therapy, language and communication training, occupational therapy, special education, vocational training and support, and management of associated medical conditions[16]. There has been no effective pharmacological treatment for the core symptoms of this prevalent and highly impairing disorder[17]. However recent studies support that the pharmacological interventions can play role in enhancing individuals' participation in behavioral /educational therapies and also control of additional mental health symptoms (irritability, aggression, hyperactivity, and intellectual disability), epilepsy and sleep problems, leading to better outcomes and overall quality of life[16,18-22].

Psychopharmacological prescription patterns for individuals with ASD shows considerable variations between countries; the highest prescription rates in Western Europe while the lowest prescription rates in Asian countries (including Turkey)[18]. It has been hypothesized that the variation of this pattern could be explained by factors such as socioeconomic status, awareness or levels of knowledge about ASD, usage of different clinical criteria, perceptions toward ASD treatment, presence or absence of guidelines for pharmacological management of ASD, and differential access to health services[18,23]. Only a few studies have been made on the frequency of psychotropic medication use in our country and prescription rates differ between 38-56%[24-27].

In this study, we aimed to examine the frequency in psychopharmacological medication use of children with ASD and determine their age range at diagnosis.

MATERIALS AND METHODS

Sample

This retrospective study included patients diagnosed with ASD that applied to the child psychiatry clinic at Dr. Sami Ulus Maternity and Children Research and Training Hospital, Ankara, Turkey, between June 2010 and June 2015. The Dr. Sami Ulus Maternity and Children Research and Training Hospital Ethics Committee approved the study protocol, which was carried out in accordance with the tenets of the Declaration of Helsinki. Data has been obtained from computerized hospital information system that includes age, age at diagnosis, gender, general medical history, and psychiatric findings. Individuals with the diagnosis of Autism (F84.0), Atypical Autism (F84.1), and Pervasive Developmental Disorder Not Other Specified (F84.9) were screened.

Statistical Analysis

Data analysis was carried out with SPSS (Statistical Package for Social Sciences) version 16 for Windows (SPSS Inc., Chicago, IL). Descriptive statistics were reported as frequencies and percentages for categorical variables and mean±standard deviation for continuous variables. Distribution of data was evaluated by using the Kolmogorov-Smirnov test. Chi-square test was used to compare categorical variables. Differences between the two groups' continuous variables were assessed by Student's t test or Mann Whitney-U test according to presence or absence of normal distribution. In all comparisons, statistical significance was defined as $p<0.05$.

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Table 1: Distribution of age at diagnosis according to gender (n=438)

	Female		Male		All group	
	n	%	n	%	n	%
Age at diagnosis (months)						
0 - 24	16	18.8	72	20.4	88	20.1
25 - 36	29	34.1	98	27.8	127	29.0
37 - 48	19	22.4	71	20.1	90	20.5
49 - 60	4	4.7	48	13.6	52	11.9
≥ 61	17	20.0	64	18.1	81	18.5
	85	100.0	353	100.0	438	100.0

Table 2: Age at diagnosis according to presence or absence of psychotropic medication

	Psychotropic medication + (n=122)		No Psychotropic medication (n=316)			
	mean±SD		mean±SD		U	p
Age at diagnosis (months)	51.93±32.60		42.82±25.90		15818.5	0.004
	n	%	n	%	χ^2	p
0 - 24	23	18.9	65	20.6	13.245	0.010
25 - 36	30	24.6	97	30.7		
37 - 48	17	13.9	73	23.1		
49 - 60	20	16.4	32	10.1		
≥ 61	32	26.2	49	15.5		

SD: Standard Deviation

RESULTS

In this study, retrospective data of 523 patients with diagnosis of ASD that was obtained from computerized hospital information system were examined. 426 (81.5%) of the patients were male and 97 (18.5%) of them were female. The data about age of diagnosis [(in months)=45.36±28.19] were available in 438 of patients. 215 (49.1%) of these patients have been diagnosed in the first three years of their life. The distribution age of diagnosis of patients according to gender is shown in Table 1.

Psychotropic medication was recommended to 149 (28.5%) of the 523 children and adolescents with ASD. 38 (39.2%) of 97 female patients and 111 (26.1%) of 426 male patients were on psychotropic medication. The rate of psychotropic medication in female patients was significantly higher than male patients (χ^2=6.675; p=0.01). The mean age of diagnosis of patients taking psychotropic medication [age (months)=51.93±32.60] was

Table 3: Age of medication use onset and distribution of drugs (n=149)

	n	%
Age of medication use onset (months)[a]		
≤24	11	7.4
25 - 36	19	12.8
37 - 48	16	10.7
49 - 60	25	18.8
≥ 61	75	50.3
Drug group		
Antipsychotic	136	91.3
Psychostimulant	8	5.4
Antidepressant	1	0.7
Antipsychotic +Psychostimulant	4	2.6

[a]Due to missing data n=146

significantly higher than that of the patients who were not taking any psychotropic medications [age (months)=42.82±25.90] (t=-3.064; p<0.01) (Table 2).

Age of medication use onset data was available in 146 patients. Distribution of age of medication use onset was shown in Table 3. The most commonly prescribed drug group was antipsychotics (Table 3).

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DISCUSSION

In the present study, psychotropic medication was recommended to 149 (28.5%) of the 523 children and adolescents with ASD. It has been indicated that psychopharmacological prescription rate for individuals with ASD varies widely between countries and even within the countries[18]. The percentage of patients on psychotropic medication is the lowest within the studies that were conducted in Turkey[24-27]. The selected samples of all previous studies were from university hospitals' child and adolescent psychiatry clinics. It has been known that dealing with the needs of the child with ASD causes high degrees of stress in parents. At the time of diagnosis, most of the parents wished for a quicker and easier process but after an adjustment period, following the initial diagnosis of ASD, parents tend to present to medical institutes that provide more information on developmental and interventional issues[28]. It can be suggested that more severe and highly impaired children and adolescents are more likely to apply or referred to university hospitals' child and adolescent psychiatry clinics.

The rate of psychotropic drug use in female patients has been found higher than male patients in our study. In previous studies findings on this issue were inconsistent[24-27]. Antipsychotics were the most common psychotropic medication in the present study.

The mean of age at diagnosis of our sample is 45.36 months. In literature similar findings were present and it has been also shown that screening instruments can provide earlier diagnosis[11-14,29]. In our sample it has been found that the mean age at diagnosis was significantly higher in patients taking psychotropic medication. Many studies investigated the possible factors (gender, age, sociodemographic features, comorbidities etc.) that might play a role in the psychotropic medication decision in clinics[30-32]. Early diagnosis of ASD has a leading role in prognosis. Our results indicate that delay of diagnosis also could be related to need of psychotropic medication in patients with ASD.

The current study is the largest clinical-based study that evaluates the psychotropic medication rate of patients with ASD in Turkey. However, it has still some limitations. Data was collected retrospectively from computerized hospital information system that enables to reach large sample size but also leads to lack of some critical data such as detailed sociodemographic features, cognitive abilities, properties of special education, and presence of comorbidity.

Despite some limitations, the results of the present study suggest the delay of diagnosis can be included as a factor for psychotropic medication need of patients with ASD. Nearly half of the patients have been diagnosed in the first three years of their life. ASD is a prevalent and highly impairing disorder that brings a large burden both for patients' families and healthcare system. Further studies with more detailed sociodemographic, developmental, and therapeutical (behavioral, educational, pharmacological) data are likely to be required to determine the present situation and related factors of psychotropic medication of ASD in Turkey. Also future studies evaluating the clinical and familial features of patients that play role in early diagnosis will be necessary.

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