FREQUENCY, CLINICAL CHARACTERISTICS AND CO-MORBIDITIES OF ATTENTION DEFICIT HYPERACTIVITY DISORDER PRESENTING TO A CHILD PSYCHIATRIC CLINIC AT A UNIVERSITY HOSPITAL IN PAKISTAN

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ABSTRACT

Objective: This study was aimed to describe the frequency, gender ratio, clinical characteristics and co morbidities of ADHD in Pakistani population.

Design: Descriptive study

Place and duration of study: Department of Psychiatry of Aga Khan University Karachi from June 2002 to June 2004.

Subjects and Methods: We reviewed the case records of 166 consecutive referrals at our child psychiatric clinics during the above mentioned time period .

Results: Clinical notes of 166 patients presenting to child psychiatric clinic from July 2002 to July 2004 were reviewed. Sixty three (34%) children were diagnosed with ADHD. Gender ratio was 1 to 5 for females to males. Females presented more with in-attentive type of disorder as opposed to males who had more hyper-active, impulsive symptamatology. One third of the sample had co morbid psychiatric illnesses. Mental retardation and depression was more prevalent in our sample. Developmental abnormalities were also reported in one third of the cases. Family history of psychiatric illness was present in 50 % of cases.

Conclusion: The syndrome of ADHD has broadly similar prevalence, clinical characteristics and co morbidities in clinical population in Pakistan to that reported in the literature from studies in Western countries.

Key words: ADHD, Child psychiatry, Pakistan.

INTRODUCTION

Attention deficit Hyperactivity disorder (ADHD) is among the most prevalent mental disorder in children and is characterized by three core symptoms of inattention, hyperactivity, and impulsivity. It is one of the most difficult diagnoses to categorize as evident form changing definition criteria observed in the revisions of Diagnostic and statistical manual [1-3]. The prevalence of ADHD in the general population of school age children is about 3% to 5% in the west [4, 5]. Epidemiological studies report the gender ratio of 4 to 1, while clinical studies report the gender ratio of 9 to 1[6].

Medline search showed no published studies on ADHD from Pakistan. In neighboring country India only few studies has evaluated the ADHD and these report a prevalence ranging from 5% to 10% [7-9]. Reports from community based epidemiological sample gave a lower prevalence estimates from Al Ain, Arabian peninsula[10]. However, prevalence estimates vary according to the diagnostic criteria used, population sampled and informants interviewed.

Pakistan is a south-east Asian country with a population of 140.7 million. There are 20.39 million children in school, more boys than girls. There is no data on school attendance. Services available for children are limited to major urban centers of the country which comprises of 30% of the whole population. Total numbers of registered psychiatrist are not more than 320, with only two registered child psychiatrist for the whole population. There are no specialized in-patient child psychiatric units [11]. Predominance of American research in the this field and apparent difference in the prevalence of ADHD, or hyperkinesis, as defined by World Health Or-

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ganization (WHO) ICD, has led to the impression that this is largely an American disorder and is much less prevalent else where[12]. Therefore there is a need to study the sociodemographic and clinical characteristics of ADHD in developing country like Pakistan. This study was aimed to describe the frequency, gender ratio, clinical characteristics and co-morbidities of ADHD in Pakistani population.

SUBJECTS AND METHODS

Aga Khan University is a 500 bedded tertiary care unit that caters to the needs of the largest metropolitan city, Karachi and rest of the country. Department of Psychiatry comprises of two full time child psychiatrists. Only the first author (ES) practices as a specialist child psychiatrist. Children are seen on referral from school teachers, specialists or on request of parents. Medical record is maintained by health information management system (HIMS) through seven digit confidential file. Files not in use for more then five years are scanned through computers, for economy of space and data to be retrieved when required.

We reviewed the case records of 166 consecutive referrals from June 2002 to June 2004. . Comprehensive diagnostic interview with the parents was used as opposed to rating scale. Complete physical and neurological examination was carried out to rule out other conditions which may be responsible for child's behavior. Data was extracted from specifically designed data-extraction form. Software of SPSS (Version 10) was used in order to process the data.

RESULTS

Socio-demographic characteristics: Out of 63 patients 51(80.19%)were male while the rest were female (19.10%). 37% patients were less than 5 years of age. 49% children were in the age range of 6 and 10 years and 19 % children were in the age range of 11 and 15. Further details of socio-demographic characteristics are shown in table 1.

Table 1

Socio-demographic Characteristics

Variable	Frequency	Percentage
Education		
Pre school	11	17%
Primary school	30	48%
Secondary School	03	4.2%
Home tutoring	01	2.1%
Special Education	01	2.1%
No Education	17	2%
Family type		
Nuclear	20	31%
Extended	19	30%
Referral source		
Medical professionals	30	48%
Parents	32	50%
Schools	01	2%

Presenting Symptoms

Out of 166 patients seen during the duration of two years 63 patients were diagnosed with ADHD representing 34 % of total sample. Forty four percent children presented with the complaint of inattention while hyperactivity was present in 48 % cases. In 35% children anger and aggressiveness was the primary reason for consultation while 6.3% cases reported agitation. Speech delay was the reason for consultation in 14.3 % cases. 20.6 % children were aggressive towards other s while 6 % children's had history of serious self-harm and self mutilation. A small minority (5.4%) presented with the complaints of agitation and oppositional symptoms.

Co-morbidities

Psychiatric co-morbidities

ADHD was the principle diagnosis in 56 children out of 63(88.88%) while other diagnostic categories were given secondary consideration. In the remaining 7 children(11.11%) ADHD was a secondary diagnosis while they had other primary diagnoses. 16.7 % children had Mental retardation. 8.4% children's had depressive disorder. 19.7% had enuresis while encoperesis was present in 4.8% children. Learning disability was present in 16 % patients. Small minority had pervasive developmental disorder (PDD), Autism, Obsessive compulsive disorder (OCD), Epilepsy, adjustment disorder and specific developmental disorder (table-2).

Developmental co-morbidities

In the whole sample with ADHD, 14.3 % patients had gross motor while 23.8 % had fine motor delay. Speech delay was recognized in 27% patients. No patient had been to speech therapist while only one child had seen a pediatrician in the past. Six percent children had a birth complication in the form of prolonged obstructed labor associated with apnea and pre-mature birth in one child.

Medical co-morbidities

Asthma and other allergic conditions were present in 14.3 % patients and 4 % patients had anemia. 6.3 % patients had different type of infections with tuberculosis and other agents while 6 % patients had history of febrile seizures.

Family Psychiatric history

Among the sample with ADHD 50% children had a family history of any psychiatric illness. Amongst these 74.6% of the first degree relatives while 25% of the seconddegree relatives had any psychiatric disorder.

Management

Pharmacological: Stimulants (Methylphenidate) were prescribed in 31 % patients while 11 % children's were on antidepressant medications. Small minority was on antipsychotic and anti-anxiety medication. There were no medications prescribed in 49 % children and primarily managed on non-pharmacological means.

Table-2

First three diagnostic codes given to patients, based on DSM-IV criteria.

Primary Diagnosis	Co morbid Diagnosis 1	Co morbid Diagnosis 2
ADHD* 56 (88.9%)	ADHD* 07 (11.1)	Mental retardation 03 (4.8%)
Depression 02 (3.2%)	Depression01 (1.6%)	Borderline intelligence 01(1.6%)
Mental Retardation 01(1.6%)	Mental Retardation 07(11.1%)	Adjustment disorder 01 (1.6%)
Borderline intelligence 01(1.6%)	Epilepsy 02(3.2%)	OCD+ 01(1.6%)
Speech disorder 01(1.6%)	Speech disorder 03(4.8%)	Speech disorder 05 (7.9%)
PDD** 01 (1.6%)	PDD** 01 (1.6%)	Autism 01 (1.6%)
Others 01 (1.6%)	Autism 01 (1.6%)	Seizure disorder 01 (1.6%)
	DCD*** 01 (1.6%)	DCD*** 01 (1.6%)
	None 30 (57.1%)	None 46 (73%)

ADHD*: Attention deficit hyperactivity disorder

OCD+: Obsessive compulsive disorder

PDD**: Pervasive developmental disorder

DCD***: Developmental co-ordination disorder

Non pharmacological management included different types of psychological interventions. These include counseling (16 %), behavior advises (17.5 %), Reassurance (6.3 %) and speech therapy (20 %). Special education, occupational therapy and social skills training were recommended in small minority. In 35 % cases patients were referred to other specialist services including clinical psychologists, speech therapist or occupational therapist after non-specific behavioral interventions and advise.

DISCUSSION

This paper aimed to study the syndrome of ADHD in a clinic sample and report its clinical, demographic characteristics and co morbidities. ADHD is the most frequent diagnosis in child psychiatric clinics with prevalence estimates ranging from quarter to half of the clinical sample[13]. Our sample showed the similar trends. ADHD was present in 63 (34 %) children out of 166 patients seen over the course of two years. We can presume that in our clinical population syndrome of ADHD exists in similar manner as reported in the western literature, when DSMIV diagnostic criteria are used.

The clinical, demographic characteristics and co morbidities are also consistent with those reported in the western. There is a clear gender difference in the prevalence of ADHD. Epidemiological studies report the gender ratio of 4 to 1, while clinical studies report the gender ratio of nine to one[6]. The main reason behind this selective referral bias could be the nature of the symptomatology. Girls have primarily in-attentive type of disorder with predominant cognitive problems. Boys have more aggressive/impulsive conduct symptomatology which leads to earlier referral[14]. Similar trends were seen in our data when it was cross tabulated with gender and presenting symptomatology.

Co morbidity is a major problem in ADHD and has been reported to be around two-third of the clinical sample [4]. In our sample a wide range of co morbid disorders were diagnosed. The most common was Mental retardation and learning disability; this is comparable to range of 10 %- 25% reported by McGee R and et al[15]. The proportion of children diagnosed with co morbid Major depression is somewhat lower than other studies August et al [16]. Quarter of our sample could be diagnosed to have deficit in attention, motor control, and perception (DAMP) along with ADHD. It is a syndrome described by Gillberg et al (2003)[17]. It contains heterogeneous group of development coordination disorder (DCD) and ADHD patients. Literature usually points to more physical co-morbid conditions in pediatric sample then psychiatric population[18] .This could account for some of the observation from our sample as most of the patients in our sample were either self referred or were referred from the medical /pediatric source.

As reported in the western literature ADHD breeds true in the families[19]. Our data also reported three fourth of first degree and a quarter of second-degree relatives having the illness. Over all half the patients having any family member with ADHD or related psychiatric illness is pretty much consistent with the western literature[14]. Psychosocial factors are not thought to play a primary etiological role[20].

Consistent with Western literature ,pharmacotherapy was the first choice of treatment of child with sever ADHD. Behavior modification techniques were recommended for children with mild to moderate ADHD. In our sample medications were prescribed in half the cases considering the robustness of evidence for their safety and efficacy. Equivalent numbers were managed on psycho-social grounds.

CLINICAL IMPLICATIONS

ADHD is a chronic disorder with significant behavioral and emotional sequels. It is best managed by a multidisciplinary team effort and a combination of pharmacotherapy usually with stimulant medications, behavioral interventions and environmental changes. In a developing country like Pakistan there are few allied specialist services. Problem is compounded by poor awareness on part of parents, teachers and health professionals. This is evident from low referral rate from schools and lack of follow-up seen at our clinic. Pharmacological management of ADHD calls for prescription of stimulant medication like methylphenidate. There is significant resistance and controversy regarding the use of stimulant medication both on part of physicians and parents[21]. They argue against the use of chemical methods for management of behavior disorder i.e. ADHD. The findings of this study call upon a need to develop awareness regarding the prevalence of ADHD and co morbid conditions and make efforts to developed links with the services and resource persons that are available both within the country and abroad.

LIMITATIONS

This study has several limitations. Aga Khan University hospital is tertiary care, private, fee for service hospital. The sample therefore represents referred population. Who could afford to pay. The details of the variables were derived from case notes. Therefore conclusion should be drawn with caution about the whole population from our study. Given the constraint of time and resources this study will serve as a base line work for further studies. There are further research questions that are generated by our work and should be addressed by community based epidemiological work.

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