Psychosocial Study of Children with Attention Deficit Hyperactivity Disorder

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Twenty children with ADHD compared with 15 control cases "matched by age and sex" were studied clinically by semistructured interview of the children and their parents and psychometrically using WISC and Conners scale.

The aim was: **a) to find out the role of psychosocial factor in the pathogenesis of such disorder B) the relation of severity of symptoms to age and I.Q. This may help in proper care and prevention of such cases.**

The results showed that: **Complicated delivery, delayed milestones, low level of parent's education and occupation, broken home, family history of ADHD are statistically more common in patients than control cases. On the other hand, medical illnesses and accidents, birth order, type of parent's job (except if mother is working semi skilled or non skilled job), and home troubles are statistically not significant between patients and control cases.**

Correlating the severity of symptoms; as measured by Conners scale; with IQ and age showed that: neither the age of the child nor his level of intelligence correlated significantly with the total score of Conners scale. On the other hand: age showed significant negative correlation, and IQ showed significant positive correlation with subitem (6) of Conners scale "inattention and easily distracted".

***Conclusion*: In the view of this study we can conclude that complicated delivery, delayed milestones, low level of parent's education and occupation, broken home, and family history of ADHD are risk factors that should be considered in prevention programs of ADHD. Although the symptom of "inattention and easy distractibility" is more severe in young children but its positive correlation with IQ should be confirmed by future studies.**

(Egypt.J. Psychiat., 1997, 20: 37- 45).

Introduction

Attention deficit hyperactivity disorder (ADHD) was defined as "significant difficulty in age appropriate governed behaviour, which arises in infancy or early childhood (Barkley, 1982). It is significantly pervasive in nature and is not the direct result of general intellectual retardation, severe language delay, emotional disturbance or gross sensory or motor impairment.

A consistent dominance of prevalence of ADHD has been reported in males over females, with the ratio of 7,7:1 boys to girls. Attention deficit hyperactivity disorder is assumed to be common in children belonging to lower social classes (Goodman and Stevenson, 1989 a). The urban rate is slightly higher than the rate in small urban and rural areas, though it is statistically not significant (Gada, 1987).

Ten percent of children with ADHD has a history of similar condition when they were children (Biederman et al., 1986). Raport et al (1986) found no significant difference in IQ of children of ADHD and comparison group.

The aim of this work was: a) To find out the role of psychosocial factors in the pathogenesis of such disorder B) the relation of severity of symptoms to age and IQ. This may help in proper care and prevention of such cases.

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Subjects and Method

The study was conducted on the children with attention deficit hyperactivity disorder ADHD diagnosed according to diagnostic and statistical Manual of Mental Disorders (DSM-IV) who attended department of neuropsychiatry of Tanta University Hospital at the period from January to June 1995 and was fulfilling the following selection criteria:

a- No gross neurological manifestations or epilepsy.

b- Intelligence quotient (IQ) should be 90 or more.

1- Twenty children was the number found to be suitable for the study and the parents agreed to participate in the study.

2- Fifteen children (from those who attended the hospital for other reasons e.g. dental clinical and their parents agreed to participate in the study and matched with patients by age and sex was used as **control.**

Both patients and controls were subjected to:

1- Clinical psychiatric and neurological examination.

2- Psychometric assessment.

a) Wechselar Intelligence Scale for Children (WISC) to asses IQ and to exclude mentally subnormal children.

b) Conners Abbreviated rating scale, Arabic version (El-Defrawi et al., 1992).

Results

1- Demographic data:

Age of children with ADHD ranged from 7.5 to 9.8 years with mean of 8.63±0.65 years. The age of control children ranged from 7.5 to 9.5 years with mean of 8.31 ± 0.55 year. The difference of both groups is statistically not significant (p> 0.05).

Sixteen (80%) of children with ADHD are males & 4 (20%) are females, in comparison to 12 (80%) of controls are males & 3 (20%) are females. No statistical difference between both group (P> 0.05). However this denotes the male preponderance of ADHD.

Thirteen (65%) of children with ADHD are living in urban areas in companion to 14 (73.33%) of controls. Seven of children with ADHD (35%) are living in rural areas in comparison to 4 (26.66%) of control. So, cultural difference between both groups is statistically non significant (P> 0.05).

II- Personal history:

Nine (45%) of children with ADHD had a history of average milestones in comparison to 12 (80%) of controls. Delayed milestones were encountered in 11 (55%) of children with ADHD & in 3 (20%) of controls. The difference between both groups is statistically significant (x^2= 5.88, df= 1, p< 0.05).

Twelve (60%) of patients had complications during pre/perinatal period in comparison to 3 (20%) of controls & the difference between both is statistically significant (P< 0.05).

Prenatal complications were encountered in 4 (20%) of patients in comparison to (13.33%) of controls. The difference between both groups is statistically non significant (P> 0.05).

Complications during labour were encountered in 10 (50%) of patients in comparison to one (6.67%) of controls. The difference between both groups is statistically significant (P < 0.05). Neonatal complications were encountered only in one of the controls.

History of medical illnesses & accidents was encountered in 12 of patients (60%) in comparison to 4 of controls (26.67%) and the difference between both is statistically non significant (P>

0.05). Infections diseases was encountered in 6 of patients (30%) in comparison to 3 of controls (20%) & the difference between both is statistically non significant (P> 0.05). Malnutrition diseases were encountered in 5 of patients (25%) in comparison to one of controls (6.67%) and the difference between both is statistically non significant (P> 0.05).

III- Family history:

Eight of patients (40%) are first born in comparison to 6 of controls (40%) and there is no statistical difference between both. (P> 0.01). It was found that 3 of patients (15%) are born on order between the first and last child in comparison to 6 of controls (40%) & the difference between both is statistically non significant (P> 0.05).

It was found that 9 of patients (45%) are the last born in comparison to 3 of controls (20%) and the difference between both groups is statistically non significant (P 3> 0.05).

The degree of father's education of children with ADHD ranged from Zero to 16 years with a mean of 9.7 ± 4.66 years in comparison to control's fathers which ranged from 11 to 16 years with mean of 13.87 + 1.99 years. The difference between both groups is statistically significant (t= 3.59, P< 0.05).

The degree of mother's education of children with ADHD ranged from Zero to 16 years with mean of 6.85 ± 6.17 years, in comparison to control's mothers which ranged from 11 to 16 years with mean of 13.73± 1.91 years. The difference between both groups is statistically significant (t= 4.70, P< 0.05).

Three of patient's fathers (15%) had major professional managerial or administrative jobs, in comparison to 5 of control's fathers (33.33%), the difference is statistically non significant (P> 0.05). Eight of patients' fathers (40%) do clerical or skilled labor jobs in comparison to 10 of controls (66.66%); the difference is statistically non significant (P> 0.05). Nine of patients' fathers (which represented 45%) had semiskilled or unskilled jobs in comparison to non of the controls' fathers; the difference is statistically significant (P< 0.05).

Two of patients' mothers (10%) had major professional managerial or administrative jobs in comparison to 5 of control's mothers (33.33%); the difference is statistically non significant (P> 0.05). Three of patients' mothers (15%) do clerical or skilled jobs in comparison to 5 of controls' mothers (33.33%); the difference between both is statistically non significant (P> 0.05). Six of patient's mothers (30%) had semiskilled or unskilled labor in comparison to non of the control's mothers and the difference between both is statistically significant (P< 0.05). Six of patients'mothers (45%) are unemployed in comparison to 5 of controls' mothers (33.33%) and the difference between both is statistically non significant (P> 0.05).

Quiet home atmosphere was encountered less frequently in children with ADHD (N= 8 (40%)) than controls (N= 11 (73.33%)), the difference between them is statistically non significant (P> 0.005).

Disturbed home atmosphere was encountered more frequently in children with ADHD (N= 8 (40%)) than that of controls (N= 4 (26.67%) and the difference between them is statistically non significant (P> 0.05). Broken home atmosphere was found only in 4 cases of ADHD (20%) and none of the controls and the difference between both is statistically significant (P< 0.05).

It was found that 7 of patients which represented 35% of cases had positive family history in comparison to non of the controls. The difference between

both groups is statistically significant ($P< 0.05$).

IV- Psychometric study:

***Wechselar Intelligence Scale for Children* (Fig. 1)**

Children with ADHD had IQ which ranged from 92 to 115 with a mean of 100.6+ 6.44 in comparison to controls who had IQ which ranged from 92 to 111 with mean of 100.87± 5.51. The difference between both groups is statistically non significant

***Conners rating scale* (Fig. 2)**

Children with ADHD had scores which ranged from 16 to 26 with mean of 20.45 ± 3.41 in comparison to controls who had sores which ranged from 6 to 11 with mean of 8 + 1.73. The difference between both groups is statistically significant ($t= 14.10$, $P< 0.05$).

Statistical analysis: Table (1, 2, 3):

Significant negative correlation was detected between subitem No. 6 of Conners scale (inattention & easy distractibility) in children with ADHD and age, while positive correlation between that subitem and Total IQ. There was no significant correlation between total Conners scale scores & both Age & IQ in children with ADHD.

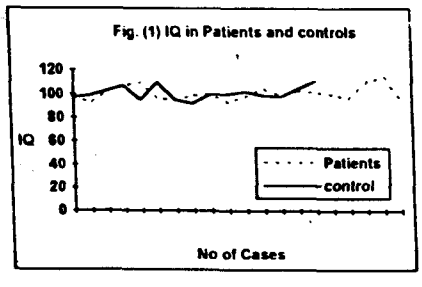
Discussion

This study showed preponderance of ADHD in boys with a ratio of 4: 1 boys to girls. This male preponderance is one of the few areas among different researchers and and in different cultures though in the ratio varied, 3.8: 1 boys to girls (Bhatia et al, 1991), 3.3: 1 boys to girls (Wang et al 1993).

Reasons for this gender discrepancy remain obscure, however postulates based on clinical impression and theoretical consideration have included:

a) Greater vulnerability of the male nervous system to developmental failures.

b) Biologically based sex difference of tolerating the intrauterine insults i.e.,



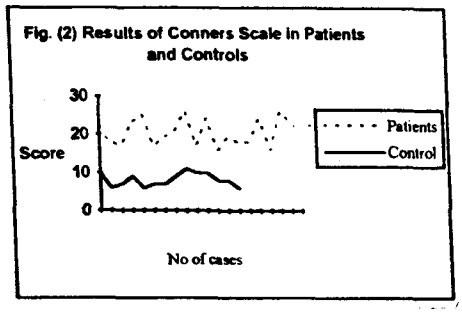


Table 1
Correlation between Age and Items of Conners Scale in Children with ADHD Using Spearman's Correlation Coefficient

	Variable	r
1	Restless or overactive.	-.2867
2	Excitable, impulsive.	.3027
3	Disturbs other children.	-.1665
4	Fails to finish things he starts, short attention span.	-.1474
5	Constantly fidgeting.	-.1297
6	Inattentive, easily distracted.	-.4740 *
7	Demands must be met immediately easily Frustrated.	.0106
8	Cries often and easily.	-.1477
9	Mood changes quickly and drastically	-.1235
10	Temper outbursts, explosive and unpredictable behavior.	.0686

* Significant Level at 0.05

Table 2
Correlation between IQ and Items of Conners Scale in Children with ADHD Using Spearman's Correlation Coefficient

	Variable	r
1	Restless or overactive.	.2279
2	Excitable, impulsive.	.1993
3	Disturbs other children.	.3479
4	Fails to finish things he starts, short attention span.	.4196
5	Constantly fidgeting.	.0759
6	Inattentive, easily distracted.	.5332 *
7	Demands must be met immediately easily Frustrated.	.3452
8	Cries often and easily.	.2356
9	Mood changes quickly and drastically	-.2421
10	Temper outbursts, explosive and unpredictable behavior.	-.1266

* Significant Level at 0.05

Table 3
Spearman's Correlation Coefficient (r) between Total Scores of Conners Scale and Age and IQ of Children with ADHD

Total Conners Scale ScoresVariable	r	P
Age	.1523	.521
IQ	-.1275	.592

female tolerating intrauterine insults than males.

c) Based on the assumption that the disorder is genetically determined with polygenetic inheritance, it is assumed that the females have a higher threshold of phenotypic expression than males (Berry et al, 1985).

No significant difference in prevalence between rural and urban cultures could be detected in the present study. The previous studies (Szatmari et al, 1989) showed non significant difference in prevalence of ADHD in urban than rural cultures. This elucidate that the culture per se is not a factor in causing or predisposing to the disorder.

Delayed milestones reported in our study going with the previous reports. Hartsough & Lambert (1985) reported a delay in crawling, talking & bowel control. They assumed this delay in these areas may be taken as predictor for later hyperactivity. The presence of delayed milestones of development coincide with the concept of defective maturation of the central nervous system as a pathophysiological etiology for ADHD where the delayed milestones were found to reflect slow central nervous system maturational process in children with ADHD (Hertsough and Rosman, 1982).

In our study the history of complicated deliveries is significantly higher in children with ADHD, compared to control group; this may indicate certain role of such factor in predisposition to ADHD, however this point is still an area of controversy among the previous studies. Some studies found a significantly high incidence of prenatal, perinatal or postnatal complications in children with ADHD (Bhatia et al, 1991), Hartsough & Lambert (1985), while others did not find such association (Gillberg et al, 1983). Taylor (1986) suggested that the trauma only increase the vulnerability for development of hyperactivity and is not a direct cause of it.

Past history of medical disease and / or accident was found to be more in patients than control cases but this difference was not statistically significant. Hartsough & Lambert (1985) found significant relationship between presence of chronic health problem and / or four or more serious accidents during childhood, and later development of ADHD; however they relate a minor etiologic role of these factors to the genesis of ADHD.

ADHD had been linked with first born children in some studies (Gada, 1987); Bhatia et al, 1991) with the assumption that complicated deliveries is more common in the first delivery & is more likely to produce brain damage in the first child during delivery which may become manifest later as ADHD. So, it is the incidence of complicated delivery & not the birth order which is relevant to the disorder. Goodman & Stevenson (1989b) did not find such association. In the present study no significant associa-

tion could be detected between birth order & ADHD.

Both father & mother level of education & their occupational status are usually taken as an overall measure reflecting socioeconomic state (August and Stewart, 1982). Fathers and Mothers of children with ADHD in the present study were shown to have significant lower classes of jobs compared to controls, these findings were supported by previous studies (Goodman & Stevenson 1989a), (Weiss, 1991). Children belonging to a lower social class may have many adverse environmental conditions which may have deleterious effect on the child behavior especially biologically vulnerable ones.

In the present study broken homes explained by absence of father or mother due to divorce were significantly higher in children with ADHD than controls. This is in agreement with (Singal et al 1988; Garfinkel and Wender, 1989). This is explained by the disturbance occurring in these families which are less likely to provide stimuli that promote maturation of attention span, and children are more likely to become a scapegoat for parental frustration (Weiss, 1991).

Positive family history of ADHD was significantly higher in children with ADHD, than control. This was reported by previous studies (Taylor, 1986); Goodman & Stevenson 1989b). This may raise the thinking of genetic contribution to the geneses of such disorder, a conclusion that well stimulate the studies in this respect.

Psychometric evaluation

The mean scores of Conners scale of the ADHD group were significantly higher than the cut off point of 15 compared to the scores of the control group being lower than 15. So, this support its use as a screening instrument for epidemiological & other research studies with considerable degree of validity & reliability (El-Defrawi et al 1990).

Item 6 (Inattentive, easily distracted) showed significant negative correlation with the age means that attention deficit in such patients could improve by increasing age on the other hand positive correlation of attention deficit with intelligence may need reevaluation by separate study; no significant correlation could be detected between age, IQ & total scores of Conners scale, and this support the view that ADHD is independent of both age & intelligence.

References

August, Gl; and Stewart, MA. (1982): Is there a syndrome of pure hyperactivity. *Brit J. Psychiat.*, **140**: 303-311.

Barkley , RA (1982): Specific guidelines for defining hyperactivity in children in: Lahey-BB. and Kazdin - AE. (Eds); Advances in clinical child psychology New York; Plenum press; vol. **5**: 137-180.

Berry, CA; Shaywitz-SE, Shaywitz-BA (1985): Girls with Attention Deficit Disorder: A silent minority? A report on behavioural and cognitive characteristics. Pediatrics; 76 (5): 801-809.

Bhatia, MS; Nigam , V.R., Bohra-N; Malik-Sc (1991): Attention Deficit Disorder with hyperactivity among pediatric out patient. *J. Child Psychol. Psychiat.*, 32 (2): 297-306.

Biederman, J; Munir, K, Knee - D (1986): A controlled Family study of patients with attention deficit disorder and normal control. Psychiatry *Res.;* **20**: 263-274.

El-Defrawi , M. H, Mahfouz - R. Ragab - L (1990): Psychiatric problems of school - age children and adolescents in a child psychiatric clinics in Suez paper read at the third international Egyptian congress of psychiatry. 3 Ist. May- 2nd June, Cairo, Egypt.

El Defrawi , M. H. Mahfouz, R. Ragab , L (1992): A reliability and validity study of rating scale for ADHD in Egyptian children, *Egypt. J. Psychiat.* **15:** 39-43.

Gada , M. (1987): A study of prevalence and pattern of Attention Deficit Disorder with hyperactivity in primary school children. Indian *Journal of Psychiatry*; **29:** 113-118.

Garfinkel , B.O. and Wender , P. H. (1989): ADHD. In: Kaplan - HI and Sadock - BJ (Eds); Comprehensive textbook of psychiatry; Baltimore, William and Wilkins; 5th edition, 1828-1837.

Gillberg , C., Carlstrom , G., Rasmussen , P (1983): Hyperkinetic disorders in children with perceptual, motor and attentional deficits. *J. Child Psycholl. Psychiat.*, **24:** 233-246.

Goodman , R., and Stevenson , J., (1989a): A twin study of hyperactivity scores and categories derived from Rutter teacher and parent questionnaires. *J. Child Psychol. Psychiat.*, **30:**671-689.

Goodman , R., and Stevenson , J., (1989b): A twin study of hyperactivity: LL- The etiological role of genes, family relationships and perinatal adversity. *J. child Psychol. Psychiat.*, **30:** 691-709.

Hartsough , C. S; and Lamber, N. M., (1985): Medical Factors in hyperactive and normal children: prenatal, developmental, and health history findings. *Amer. J. Ortho. Psychiat.*, 55 (2): 190-201.

Herkowitz, J; and Rosman , N. P. (eds) (1982): Hyperactivity and attentional disorders in pediatrics: Neurology & psychiatry Common Ground. New York; Mcmillan; 403-434.

Rapoport , JL; Donnelly , M; Zametkin - A; Carrougher - J (1986): Situational hyperactivity in a United States clinical setting. *J. Child. Psychol. Psychiat.*, **27:** 639-646.

Singhal , PK; Bhatia MS; Balkrishna - NK; Mullick - DN; Bohra - N (1988): Psychiatric morbidity. Indian Journal of Pediatrics; **55:** 575-579.

Szatmari , P; Offord , DR; Boyle , MH (1989): Ontario child health study: prevalence of Attention Deficit Disorder with hyperactivity. *J. Child Psychol. Psychiat.*, 30 (2): 219-230.

Taylor , E. A. (1986): Childhood hyperactivity (Review Article). *Brit J. Psychiat.*, **149:** 562-573.

Wang , Y.C; Chong - MY; Chou - WJ; Yang - JL (1993): Prevalence of Attention Defcit Hyperactivity Disorder in primary school children n Taiwan. *J. Formos Med. Assoc.*, 92 (2): 133-138.

Weiss, G., (1991): Attention Deficit Hyperactivity Disorder. In: Melvin Lewis (ed): child and adolescent psychiatry. Baltimore; Williams & Wilkins; 545-651.

Une Etude Psychosociale des Enfants avec Les Troubles de l'Attention et Hyperactivité

On a étudié 20 enfants avec les troubles de l'attention et hyperctivité et 15 enfants e contrôle. L'évaluation a compris une interview semi-stucturé des enfants et leur parents. on a utilisé l'examen de WISC et l'échélle de Conners.

Le but était a) de trouver le rôle du fecteur psychosocial dans la pathogénèse, b) de trouver les liens entre la sévérité de smptomes et l'âge et l' IQ, pour améliorer le soin et la preventionse ces troubles.

On a trouvé que l'accouchement complexe l' histoire des troubles dans la famille, le niveau base l'eucation de parents et de leur travail sont plus demonstrés chez les malades que chez le groupe de contrôle.

La corrélation entre l'âge et le niveau de IQ et les resultat totals de l'echelle de Connors n'etait pas significative. Cependant, on a trouvé une correlation negative entre l'âge et une corrélation positive ente l'IQ et point 6 de cette échelle (inattention et être facilement distrait).

On peut deduire que: 1) l'accouchement complexe, l' histoire des troubles dans la famille, le niveau bas de l'éducation des parents et de leur travail sont des facteurs de risque qui doivent etre considerés dans la prevention;

2) la corrélation entre le symptome d'être facilement distrait et l'IQ doit être confirmer par des rechrches futures.

دراسة نفسية واجتماعية للأطفال قليلى الإنتباه مفرطى الحركة

تمت الدراسة على ٢٠ طفلا يعانون قلة الإنتباه، وفرط الحركة، وكذلك ١٥ طفلا سليما كعينة ضابطة متوافقة مع المرضى فى العمر والجنس. وقد تم فحص الأطفال ونويهم، وذلك من خلال مقابلة شبه مرتبة لإبراز الأعراض المرضية والعوامل النفسية والاجتماعية لأسر المرضى والعينة الضابطة، كما تم استخدام مقياس وكسلر لذكاء الأطفال، وكذلك إختبار كونر لتقييم كثافة الأعراض.

هدف الدراسة: هو معرفة دور العوامل النفسية والاجتماعية فى ذلك المرض، وذلك بغرض أخذها فى الإعتبار فى برامج الوقاية.

وقد أسفرت النتائج عما يلى:

إن مضاعفات الولادة وكذلك تعثر معدلات النمو عند الطفل وإنخفاض سنوات تعليم الآباء وقلة مستوياتهم الوظيفية والمهنية والتفكك الأسرى، ووجود تاريخ أسرى سابق للمرض هى من العوامل التى أعطت مؤشرات إحصائية عالية فى الأطفال المرضى عنهم فى العينة الضابطة. ومن جهة أخرى فإن أمراض الطفولة المبكرة وترتيب الطفل بين الأخوة ونوع عمل الأبوين والاضطرابات الأسرية لم تعط فروق ذات دلالة إحصائية.

وبدراسة الإرتباط بين حدة الأعراض كما يوضحها مقياس كونرز وعاملى العمر والذكاء وجد أنه باستثناء مؤشر عدم الإنتباه وسرعة التشتت (مؤشر رقم ٦ فى الإختبار) فإن حدة الأعراض لم تعط إرتباط ذو دلالة إحصائية مع عاملى العمر والذكاء.

ويستخلص مما سبق: أن العوامل السالفة الذكر تمثل مؤشرات خطورة يجب العمل على تلاشيها أو التقليل من وطأتها عن طريق برامج الوقاية.