

Usefulness of Shirodhara in the Management of Hyperactive Children

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ABSTRACT

Attention Deficit Hyperactive Disorder is a neurobehavioral disorder of childhood period and characterized by inattention, impulsiveness and hyperactivity. A case control study was conducted in children with ADHD. Children for the present study were included from Herbal Health Care Centre, Jaffna from the period on 01.01.2013 – 28.02.2013. Children between 6 to 15 years were considered for study. 48 children were registered, out of which 8 children discontinued the treatment. Grouping of patients- Selected children were randomly divided into four groups, keeping in mind that all the four groups children from various grades(classes), schools & socio economic strata. All four groups (Group A,B,C& D) were having 12 children administered with Vallarai khiritha, Vallarai khiritha + shirodhara, placebo, placebo + shirodhara respectively. Pre-assessment screening of ADHD children was done according to Criteria. Subjects aged 6-15 years of either Sex. Children with average / normal IQ level with their Diagnostic card were included in this study. Children with physical disability, Children with psychiatric illness, Children with gross brain damage causing mental retardation, Children with any genetic disorder and Unreliable history were excluded from the study. Doses were according to the body weight of the child (200 mg/ kg / day) in 2 divided doses for 3 months. Children were called for follow up every fortnightly. Any discomfort or untoward serious side effects were noticed. After 3 months of treatment, the tests were re-administered. Effect of the therapy was assessed on the basis of improvement. This study indicates the synergistic effect of shirodhara with the study drug. Further extensive study is needed to authenticate the results of the present study, with larger samples.

Key words: Attention Deficit Hyperactivity Disorder (ADHD), Impulsivity, Reaction time, Shirodhara

1. INTRODUCTION

Behavioral and emotional disorders are now the leading cause of disability in children and adolescents [1]. Attention deficit hyperactivity disorder (ADHD) is the most frequently encountered and most extensively studied neurobehavioral disorder of childhood, characterized by inattention, impulsiveness and hyperactivity. Symptoms of ADHD are one of the leading causes of academic under achievement in children, which is the major concern for the parents to visit a pediatrician. Various recent studies have shown that ADHD is associated with significant impairment in multiple domains of child's functioning including a high frequency of psychiatric comorbidity with disruptive mood and anxiety disorder; poor educational achievement and low occupational performance [2]. Faraone ADHD is also associated with mal-adaptive interpersonal interactions and low self-esteem. [3]. Considering the present scenario of highest prevalence of ADHD among behavioral disorders, its ill outcomes in multiple areas of child's functioning and lack of safe and effective medication, the disease ADHD has been selected for the study. *Ayurveda* holding a different view regarding the etio-pathogenesis of diseases can provide newer theories of ADHD and thus newer dimensions to its management. Thus by utilizing the treasure of knowledge mentioned in *Ayurveda*, (i.e. by modification of diet, drug and lifestyle, specifically according to *prakriti*) we may provide better treatment options and improve the quality of life of the child, so that, he/she can emerge as a significant personality in society. So the aim of the study is to reduce the symptoms of ADHD.

2. MATERIAL AND METHODS

Case control study was conducted in children with ADHD.

Selection of Cases

Source - Children for the present study were included from OPD of Herbal Health Care Centre from the period on 01.01.2013 - 28.02.2013. This period they come for their ADHD treatment.

Age group - Children between 6 to 15 years were considered for the study.

Number of cases - 48 children were registered out of which 8 children discontinued the treatment.

Grouping of patients - Selected children were randomly divided into four groups keeping in mind that all the four groups had children from various grades (classes), schools & socio economic strata.

Group A - This group of 12 children were given the Vallarai khiritha.

Group B - This group of 12 children were given the Vallarai khiritha + *shirodhara*

Group C - This group of 12 children were given only placebo.

Group D - This group of 12 children were given placebo + *shirodhara*.

Diagnostic Criteria

Pre-assessment screening of ADHD children was done according to ADHD pre assessment Criteria.

Inclusion Criteria

- Subjects aged 6-15 yrs of either Sex.
- Children with average / normal IQ level with there Diagnostic card .

Exclusion Criteria

- Children with physical disability
- Children with psychiatric illness.
- Children with gross brain damage causing mental retardation.
- Children with any genetic disorder
- Unreliable history.

Assessment criteria

- DSM - IV
- Coefficient of Division of Attention
- Reaction Time
- IQ assessment

Side effect evaluation criteria

To rule out possible side effects of the study drugs, clinical criteria were adopted.

It included the documentation of information related to change in appetite, sleep, abdominal features, drowsiness, irritability etc.

Dose & Duration

Doses were according to the body weight of the child (200 mg/ kg / day) in 2 divided doses for 3 months. Children were called for follow up every fortnightly. Any discomfort or untoward serious side effects were noticed.

Placebo

Honey Doses to that of study drug.

Shirodhara

In this process, the oil was poured over the forehead of patients in the form of a regular stream from a specific height of about 8 cms in a fixed fashion in the form of oscillatory movements i.e. to & fro movement of oil stream over the forehead of the patients for 30-45 minutes daily for 2 weeks. Coding of study drug and placebo was done by another person not related with the study. The coded medicine (study drug / placebo) was given as per instructions. Coded document was sealed and kept under safe custody. The envelope was opened after completing the study.

Criteria of Assessment

After 3 months of treatment, the tests were re-administered. Effect of the therapy was assessed on the basis of improvement in obtained.

3. RESULTS AND DISCUSSION

47.50% of children were between age group 6-9 years followed by 37.50% in age group 9-12 years. Maximum numbers of children (80%) were males. Majority of patients (42.50%), belonged to lower middle class. Maximum numbers of children (70%) were of *vata-pitta prakriti*. 15% children were of *pitta-vata prakriti*. Majority of patients (50%) were of *Rajasika-Sattvika Prakriti*, followed by 30% patients of *Rajasika-Tamasika Prakriti*. Predominance of *Madhur rasa* in diet was found in maximum number of patients (45%) followed by *Amla rasa* predominance in 35% of patients. Majority of Patients (40%) had good appetite; followed by 35% of patients having excessive appetite. 15% of patients had poor appetite. Maximum number of patients (43%) showed proper sleep pattern followed by 30% of patients.

had excess sleep hours and 10% had less sleep hours. 7.5% of patients had disturbed sleep and only 2.5% of cases had delayed sleep. 45% of mother's of ADHD patients had anemia during their pregnancy. 7.5% of cases had history of seizures in infancy. Maximum number of cases (70%) had average parent-child relationship. 20% of children had poor-parent child relationship. Majority of patients showed presence of aggression (65%) and violence (57.50%). Anxiety was associated with 20% of patients. 15% of cases were associated with antisocial behavior and 30% of cases were having one more learning disability.

Co-Efficient of Division Of Attention (CD)

Table 1: Showing change in Co-efficient of Division of Attention (CD)

Groups	BT	AT	SE (±)	't' Value	'p' Value
Group A	0.35	0.29	0.0097	05.773	<0.001
Group B	0.34	0.27	0.0049	14.2857	<0.001
Group C	0.33	0.32	0.0044	01.1363	>0.10
Group D	0.34	0.32	0.0046	04.130	<0.01

Table 2: Statistical status of inter group differences in change coefficient of division of attention.

Groups	SD	SE (±)	't' Value	'p' Value
A & B.	0.0790	0.0353	0.5665	>0.10
A & C	0.0764	0.0342	0.8772	>0.10
A & D	0.0817	0.0365	0.8219	>0.10
B & C	0.0867	0.0388	01.2886	>0.10
B & D	0.0913	0.0408	01.2255	>0.10
C & D	0.0891	0.0398	0.0502	>0.10

Table 3: Showing change in Reaction Time

Groups	BT	AT	SD	't' Value	'p' Value	
A	01.36	01.20	0.72	0.1715	11.8753	<0.001
B	01.36	01.29	0.53	0.0994	21.3375	<0.001
C			01.41	0.0610	02.642	>0.10
D			0.91	0.0897	13.2394	<0.001

Table 4: Statistical status of inter-group differences of change in scores of Reaction Time

Groups	SD	SE (±)	't' Value	'p' Value
A & B.	0.1134	0.0507	03.5502	>0.10
A & C	0.1358	0.0607	11.6968	>0.001
A & D	0.1671	0.0747	02.8112	>0.02
B & C	0.1270	0.0568	15.6690	>0.001
B & D	0.1600	0.0716	05.4469	>0.001
C & D	0.1766	0.0790	06.329	>0.001

Table 5 : Overall improvement on core symptoms of ADHD in DSM-IV in all groups

Core symptoms	Group-A		Group-B		Group-C		Group-D	
	B.T	A.T	B.T	A.T	B.T	A.T	B.T	A.T
Inattention	1.83	1.11	1.68	0.66	2.01	1.81	1.97	.09
Hyperactivity	1.65	0.73	1.70	0.48	1.80	1.67	1.85	1.03
Impulsivity	1.80	1.13	1.77	0.57	1.77	1.50	1.53	1.00

Age range of the selected children for the study was 6-15 years, the disease starts before 7 and the symptoms become much clear when the child goes to school. Maximum numbers of ADHD children (47.50%) were between age ranges 6-9 years followed by 37.50% in age group 9-12 years. The data suggest higher prevalence of disease in elementary school years and gradual attenuation of symptoms with the advancement of age. Study included maximum number of male children (80%). Study included maximum number of cases (70%) with *vata-pitta prakriti* followed by 15% children with *pitta-vata prakriti*. The findings indicate some correlation between *vata-pitta prakriti* and ADHD. The symptoms of ADHD are comparable to that

of mentioned in individuals with *vata* and *pitta prakriti*. Behaviors of predominantly *vata prakriti* individuals are more similar to that of ADHD. Predominance of *pitta prakriti* over *vata* is comparable to the co morbidities & associated problems with ADHD, Anti-social behavior, violence, aggression, tempers tantrums etc. Since *prakriti* is 10. The biological/ genetic constitution of an individual, it can be concluded that *vata & pitta prakriti* predispose the child to the development of ADHD rather than *kapha prakriti*.

Excessive intake of sugar has also been known to cause ADHD [5]. 45% of mother's of ADHD patients suffered from Anemia during their pregnancy. Iron deficiency leads to increased incidences of low birth weight babies and low birth weight is considered to the cause 3 fold increased risk for ADHD [6]. The reason for the contradiction may be that the rating of ADHD children was done by both parent and teachers so that none of the symptoms were overlooked and hence the complete picture of the symptoms appear 65% of cases had aggression and 57.50% had violence associated with ADHD. Anxiety found in 20% of cases, which is consistent with other previous studies [7]. 15% cases presented antisocial behaviors. Self-neglect was found in 30% of cases whereas 25% of cases had limited social skill. Data indicate the presence of co morbid conditions and other associated problems with ADHD. The findings

are consistent with other previous studies [8]. Enuresis was present in 17.50% cases. These co morbid or associated problems complicate the diagnosis as well as the management of children with ADHD. There is no awareness of treatment of these children. But in Ayurvedic medicine has the Panchakarma method (Shirodhara). In this study it has showed the improvement significantly.

Effect of Drug

Statistical analysis of the results obtained on the core symptom, inattention showed statistically highly significant improvement in three groups A, B and D ($P < 0.001$). All the three groups A, B and D showed significant advantage over group C on comparing the inter-group differences ($P < 0.01$; $p < 0.001$ and $p < 0.001$ respectively). Also mild significant gain was observed in group B over group A ($P < 0.05$). This indicates the synergistic effect of *shirodhara* with the study drug.

4. CONCLUSION

From the study it can be concluded that both drug and *shirodhara* were effective in alleviating the symptoms of ADHD, but drug combined with *shirodhara* had much greater potential to ameliorate the symptoms of ADHD rather than the drug or *shirodhara*

alone. No adverse effects of the study drug were observed during the study. Further extensive study is needed to authenticate the results of the present study, with larger samples and more precise diagnostic and assessment criteria.

REFERENCES

[1] Costello, E.J., Edelbrock C. and Costello A.J. "Psychopathology in pediatric primary care: The new hidden morbidity". *Pediatrics* volpp 82, 415-424, 1998.

[2] Biederman J., Faraone, S. V., Keenan, K. and Tsuang M. T., "Evidence of a familial association between attention deficit disorder and major affective disorders". *Archives of General Psychiatry*, volpp 48, 633 - 642.

[3] Fischer M., Barkley R.A. and Fletcher K.E. "The adolescent outcome of hyperactive children: predictors of psychiatric, academic, social and emotional adjustment". *Journal of the American Academy of Child and Adolescent Psychiatry* vol pp 32:324-332, 1993.

[4] Brown, L.W., Maistros P. and Crvil leminault C. "Sleep in children with neurologic problems. In: Ferber R, Kryger Meds. *Principles and Practice of sleep medicine in the child*". Philadelphia : W.B. Saunders, pp 135-145, 1995.

[5] Murray, M.T. and Pizzorno JT. "Encyclopedia of Natural Medicine". Rocklin, CA: Prima Publishing; 1998.

[6] Breslau, M., Brown, G., Del Dotto, J.E. and Kumar .S., Exhuthachan. S., Andreski P., & Hufnagle, K.G. "Psychiatric Sequelae of low birth weight at 6 years of age. " *Journal of Abnormal child Psychology*", vol pp 24, 385-400, 1996.

[7] Newcorn, J.H. and Halperin JM. "Comorbidity among disruptive behavior disorders: Impact on severity, impairment and response to treatment". *Child Adolesc Psychiatr Clin North Am*, vol pp 3; 227-252, 1994.

[8] Szatmari. P., Offord, D.R. and Boyle MH. "Ontario child health study: Prevalence of attention deficit hyperactivity disorder with hyperactivity". *J Child Psychol Psychiatry* vol pp 30:219-230, 1989.