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Clinical findings of Sydenham's chorea and comparison of the efficacy of sodium valproate and carbamazepine drug use

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ABSTRACT

To estimate the incidence of rheumatoid fever in children. To investigate the clinical finding of Sydenham's chorea in children diagnosed with rheumatoid fever. To measure the efficacy of sodium valproate and carbamazepine from the therapeutic outcomes. To measure the incidence of adverse effects in children administered with sodium valproate and carbamazepine. The present study is a prospective study designed to compare the therapeutic outcomes and side effects of chorea groups administered with sodium valproate and carbamazepine. The study was conducted in Chittoor Government hospital, Chittoor, Andhra Pradesh. The present study was conducted in Chittoor Government Hospital, Chittoor, Andhra Pradesh. The study is a prospective design was conducted in the departments of paediatrics of respective tertiary care hospital which included the patients admitted to children's ward with provisional/ final diagnostic rheumatoid fever. The study conducted after getting the informed consent forms from all the patients included in the study. The patients recruited into the study were divided into 2 chorea groups, and each group were administered with one different drug. From the study, it was concluded that the rate of incidence of rheumatoid fever was relatively decreased from years. However, the initial dose of both the drugs should be tapered slowly for minimizing the dose-related side effects especially like aggressive reaction, weight gain, somnolence and insomnia.



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INTRODUCTION

Acute rheumatoid fever is commonly seen in children of all age groups (Cardoso F *et al.*, 2003). Sydenham's chorea is one of the major diagnostic criteria of acute rheumatoid fever in both children and adolescents (Penã J *et al.*, 2002). It was first demonstrated by Sydenham in detail in 1686 (Bonthius DJ and Karacay B, 2003). There are

many types of chorea among which Sydenham's chorea is a form of acquired chorea which is most commonly seen (Kilic A *et al.*, 2007). It is often essential to take treatment for controlling choreic movements, which may be sometimes long-acting or severe in some conditions (Loiselle CR and Singer HS, 2001). In brief, chorea is defined as the movement disorder with rapid, involuntary, irregular, jerky movements as its specific characteristics affecting various parts of the body which includes limbs, face, and trunk regions (Aron AM, 2005). Although many causes exist for childhood chorea, acquired chorea has been noted to be the major cause of Sydenham's chorea (SC) (Garvey MA *et al.*, 2005). Acute rheumatic fever (ARF) is caused by A b-hemolytic Streptococcus infection (Panamonta M *et al.*, 2007). However, the incidence of acute rheumatoid fever has been reduced to a large extent in both developed and developing countries since the 20th century noted according to the literature reviews on the epidemiology of ARF

(Kabakus N *et al.*, 2006). Hypotonia, muscle weakness, emotional lability, anxiety, attention deficit, tic disorders, psychotic features, executive function disturbances are commonly seen disorders accomplished with SC (Van der Merwe PL and Kalis NN, 1997).

The present was designed to study the correlation of Sydenham's chorea with diagnostic acute rheumatoid fever and also to analyse the efficacy of sodium valproate and carbamazepine with their therapeutic outcomes and adverse effects (Walker KG *et al.*, 2015; Berrios X *et al.*, 1985). The whole chorea included 28 patients of different age groups.

Aims and objectives

- To estimate the incidence of rheumatoid fever in children
- To investigate the clinical finding of Sydenham's chorea in children diagnosed with rheumatoid fever.
- To measure the efficacy of sodium valproate and carbamazepine from the therapeutic outcomes.
- To measure the incidence of adverse effects in children administered with sodium valproate and carbamazepine.
- To compare the efficacy and rate of incidence of adverse effects in patients administered with their respective drugs (sodium valproate, carbamazepine).

METHODOLOGY

The present study is a prospective study designed to compare the therapeutic outcomes and side effects of chorea groups administered with sodium valproate and carbamazepine. The study was conducted during January 2017, and June 2017 in the department of paediatrics and children ward after getting approval from the Institutional Ethics Committee (IEC). The study was conducted in Chittoor Government hospital, Chittoor, Andhra Pradesh.

Inclusion criteria: Children with provisional diagnosis or final diagnosis of rheumatoid fever of all age groups admitted to the paediatrics department.

Exclusion criteria: Children diagnosed with other clinical conditions like bacterial infection, gastroenteritis, appendicitis etc.

RESULTS AND DISCUSSION

The present study was conducted in Chittoor Government Hospital, Chittoor, Andhra Pradesh. The study is a prospective design was conducted in the departments of paediatrics of respective tertiary care hospital which included the patients admitted

to children's ward with provisional/ final diagnostic rheumatoid fever. The study conducted after getting the informed consent forms from all the patients included in the study. The patients recruited into the study were divided into 2 chorea groups, and each group were administered with one different drug. That is, on a group of patients were given with sodium valproate, and other groups of the population were administered with carbamazepine.

The whole chorea group with clinical findings of Sydenham's chorea included 28 patients identified during the study period of January 2017 and June 2017 in the department of paediatrics. Different laboratory investigations were done in overall study population, like, ESR(MM/h), ASO (TU), IgG (mg/dl), IgM (mg/dl), IgA (mg/dl), C3 (mg/dl).

The mean duration of complaints in the overall study population was found to be 24.4 ± 36.7 , mean ESR (MM/h) was found to be 22.6 ± 15.8 , ASO (TU) mean was found to be 614.6 ± 312.1 , IgG (mg/dl) was found to be 1738.8 ± 534.1 , mean IgM (mg/dl) was found to be 151.7 ± 82.8 , IgA (mg/dl) was with a mean of 236.8 ± 71.4 , C3 (mg/dl) was observed to be with a mean of 108.4 ± 30.8 , which were clearly represented in Table 1 along with their minimum to maximum reference ranges.

Various clinical outcomes of both the drugs in respective patients were monitored and noted. The various clinical outcomes collected included details on the duration of complaints (days), the onset of clinical improvement (day), the onset of complete remission (week), duration of drug use (months), recurrence rate (%), generalised chorea.

All the therapeutic outcomes of the respective drugs have been briefly enlisted in the table 2, in comparison of sodium valproate and carbamazepine. From the study was noted that the percentage of recurrence of SC was comparatively more in patients administered with carbamazepine when compared to sodium valproate. However, the incidence of generalised chorea was relatively less in chorea group with sodium valproate than carbamazepine (Fusco C *et al.*, 2012).

Various adverse effects observed and reported in the study population have been enlisted in Table 3. Adverse effects like somnolence, fatigue, increase in weight, rash, nausea/vomiting/dyspepsia, abdominal pain, increased appetite, alopecia, aggressive behaviour, anorexia, diplopia, insomnia have been noted (Daoud AS *et al.*, 1990).

In a comparison of sodium valproate and carbamazepine, the incidence of insomnia, diplopia, dizziness, rash, somnolence, and fatigue was relatively more in carbamazepine administered group than sodium valproate groups (Kulkarni ML, 1992).

Table 1: laboratory infestations of the overall study population with their mean \pm SD

Clinical laboratory findings	Mean \pm SD	Min-max(reference range)
Age (year)	11.5 \pm 1.8	5-14
Duration of the complaints (day)	24.4 \pm 36.7	2-180
ESR (MM/h)	22.6 \pm 15.8	2 – 65
ASO (TU)	614.6 \pm 312.1	114 – 1200
IgG (mg/dl)	1738.8 \pm 534.1	1054 – 2676
IgM (mg/dl)	151.7 \pm 82.8	58 – 327
IgA (mg/dl)	236.8 \pm 71.4	147 – 404
C3 (mg/dl)	108.4 \pm 30.8	62.9 -146

Table 2: comparison of clinical outcomes of sodium valproate and carbamazepine in the overall study population

Variables	Sodium valproate	Carbamazepine	P value
Female sex (%)	67.4%	65.8%	0.51
Male sex (%)	32.6%	34.2%	0.31
Duration of the complaints(day)	22.5 \pm 19.5	25.8 \pm 40.7	0.82
Onset of clinical improvement (day)	7.5 \pm 4.5	7.4 \pm 8.1	0.89
Onset of complete remission (week)	10.5 \pm 8.9	6.8 \pm 6.2	0.34
Duration of drug use (month)	4.2 \pm 2.7	5.1 \pm 2.3	0.54
Follow-up (month)	31.8 \pm 17.5	34.6 \pm 15.4	0.77
Recurrences (%)	13.5	18.4	0.88
Generalized chorea (%)	71.3	64.2	0.78

Table 3: Adverse effects reported by study population

Adverse effects	Sodium valproate	Carbamazepine
Somnolence	8	10
Fatigue	3	9
Weight increase	8	4
Rash	2	4
Nausea/vomiting/dyspepsia	2	2
Abdominal pain	2	3
Increased appetite	9	0
Dizziness	1	5
Aggressive reaction	2	2
Anorexia	3	1
Alopecia	2	1
Diplopia	0	2
Insomnia	0	2

Whereas, weight gain, increased appetite, were of more in incidence in sodium valproate administered group when compared to carbamazepine administered group (Swedo SE *et al.*, 1993).

CONCLUSION

From the study, it was concluded that the rate of incidence of rheumatoid fever was relatively decreased from years (Harel L *et al.*, 2000). The two drugs sodium valproate and carbamazepine are both effective in treating the movement disorder of Sydenham's chorea (Heye N *et al.*, 1993). However, the initial dose of both the drugs should be tapered slowly for minimizing the dose-related side effects especially like aggressive reaction, weight gain, somnolence and insomnia.

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