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Original Research Article

A case series of cyclic vomiting syndrome in paediatric patients at a tertiary care hospital in Chennai, Tamil Nadu, India

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ABSTRACT

Background: Cyclic vomiting syndrome is an increasingly recognized disorder with sudden, repeated episodes of severe nausea, vomiting, and physical exhaustion that occur with no apparent cause. It is more common in children than adults. However, we don't often see a diagnosis of cyclic vomiting syndrome being made. Hereby we report 7 cases of cyclical vomiting.
Methods: This is a retrospective study. Medical records of 5 years were review and consecutive paediatric patients discharged with a diagnosis of cyclic vomiting syndrome were identified, data collected and analysed.
Results: Total of 7 cases were found, all of which were adolescents. The mean age was 13.28. 57.14% (4) were females and 42.86% (3) were boys. 42.86% (3) presented with complications. 14.28% (1) had an association with menstrual cycles and 14.28% (1) had an association with psychological stress.
Conclusions: Cyclic vomiting syndrome should be kept in mind when a child presents with multiple episodes of vomiting, especially when repeated admissions have been made for the same. Early diagnosis and treatment can improve the quality of life.

Keywords: Cyclic vomiting syndrome, Dyspepsia, Migraine, Recurrent vomiting

INTRODUCTION

Cyclic vomiting syndrome is a functional gastrointestinal disorder with numerous episodes of vomiting interspersed with well intervals. Each episode may last for a few hours to several days followed by which, the affected patients are completely asymptomatic. The alternating pattern of symptoms is what differentiates cyclic vomiting syndrome from other gastrointestinal disorders.

Incidence was reported to be 3.15 per 100,000 in a study of 1,647 participants conducted in Ireland.[1] This disorder is generally under-diagnosed and under-treated. This disorder is more common in children than adults. The symptoms can be very incapacitating leading to multiple hospital admissions, school absenteeism and decreased quality of life of affected children. Therefore, the goal should be early diagnosis and management of these individuals. The aim of this study is to provide an overview of the clinical profile of paediatric patients diagnosed with cyclic vomiting syndrome in our hospital and to introduce the disorder in terms of diagnostic criteria, management and prophylaxis to physicians. Awareness about the disorder will help in early diagnosis and appropriate prophylaxis thereby improving the quality of life of the patient.

METHODS

Study was done at Sri Ramachandra Hospital, Chennai, India. This is a retrospective study. Permission for the study was obtained from the Institutional Ethics

committee of Sri Ramachandra Institute of Higher Education and Research. Medical records from August 2012 to August 2017 were reviewed.

Consecutive paediatric patients up to the age of 18 years discharged with a diagnosis of cyclic vomiting syndrome were identified. Patients below 18 years of age, admitted for recurrent vomiting were also identified.

Total of 13 patients were identified, out of which 7 fit into the criteria for the diagnosis of cyclic vomiting syndrome. North American Society for Paediatric Gastroenterology, Hepatology and Nutrition (NASPGHAN) criteria was used for the diagnosis of cyclic vomiting syndrome.

All the relevant data including the age, sex, duration of symptoms, age at diagnosis, associated factors, treatment and complications were collected from the medical records of these 7 patients in a structured pro forma and clinical profile was analyzed using simple percentage method.

RESULTS

Over the 5 years, 13 children (below 18 years of age) were admitted for recurrent vomiting and 7 out of 13 were diagnosed with cyclic vomiting syndrome based on the North American Society for Paediatric Gastroenterology, Hepatology and Nutrition (NASPGHAN) criteria (Table 1).

All 7 were found to be in the adolescent age group. 57.14 % (4) of them were females and 42.86% (3) of them were males. The mean age at the time of diagnosis was 13 years. Duration of symptoms prior to diagnosis ranged between 6 months to 5 years. The average number of admissions prior to the current episode was 5 (Table 2).

Table 1: Demographic details of patients, details of previous hospitalisations and prophylaxis prior to the hospitalization.

Case no.	Age	Sex	Age at diagnosis	Number of previous admissions	Whether on prophylaxis or not
1	15 years	Female	15y	5	Propranolol
2	12 years	Male	12y	3	Nil
3	17 years	Female	16y	7	Propranolol
4	12 years	Male	11y	6	Nil
5	17 years	Female	17y	6	Nil
6	10 years	Male	10y	8	Nil
7	10 years	Female	10y	Nil	Nil

Table 2: Complications, associations and the treatment given to the patients.

Case no.	Complications	Associations	Treatment given
1	Malnutrition, dehydration	Migraine	Ondansetron, Propranolol, Dietary advice, Oral iron
2	Nil	Nil	Ondansetron
3	Nil	Nil	Ondansetron, Propranolol
4	Dehydration	Nil	Ondansetron, Flunarizine
5	Malnutrition	Catamenial	Ondansetron, Topiramate
6	Nil	Migraine	Ondansetron, Propranolol
7	Nil	School fear (psychological factor)	Ondansetron, Clinical Psychology follow up

4 (57.14%) children out of 7 were found to have an association. 2 children (28.57%) were found to have migraine. In 1 child (14.28%), symptoms were found to have an association with her menstrual cycles. 1 child (14.28%) was found to have an underlying psychological factor.

42.86% (3) were found to have complications- malnutrition and dehydration. All the children received anti-emetics and intravenous fluids for acute management. 5 (71.42%) children out of 7 were started on prophylaxis before discharge. Propranolol was the most preferred drug for prophylaxis and was prescribed for 3 out of the 5 children receiving prophylaxis.

2 children who were on propranolol prophylaxis were found to have a recurrence of symptoms requiring hospital admission despite good drug compliance. T

his may suggest that despite prophylaxis, patients with Cyclic vomiting syndrome are prone to have a recurrence of symptoms.

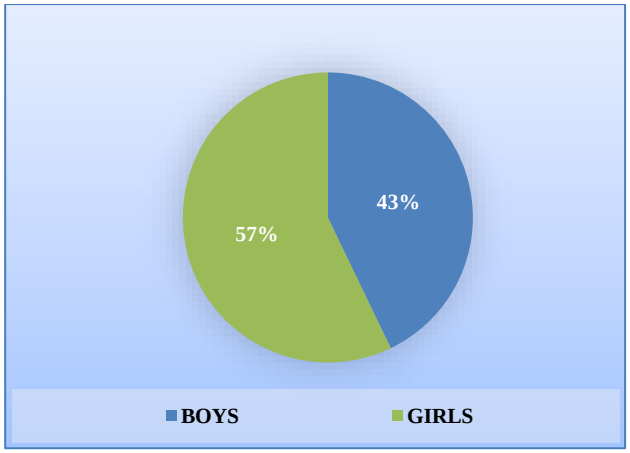

Figure 1: Gender distribution of cyclic vomiting syndrome seen in patients.

Out of 7 patients, 4 were girls and 3 were boys.

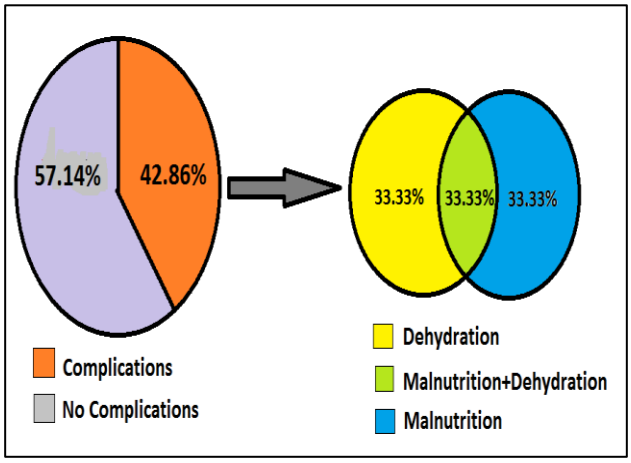

Figure 2: Complications of cyclic vomiting syndrome seen in our patients.

Out of 3 patients having complications, 1 patient had dehydration, 1 patient had malnutrition and 1 patient had both dehydration and malnutrition.

DISCUSSION

Cyclic vomiting syndrome is an idiopathic disorder characterised by recurrent, stereotypical bouts of vomiting with intervening periods of normal health. It was first described in France in the year 1861.

All of the criteria must be met to meet this consensus definition of cyclic vomiting syndrome issued by the North American Society for Paediatric Gastroenterology, Hepatology and Nutrition (NASPGHAN)[2]:

- At least 5 attacks in any interval or a minimum of 3 attacks during a 6-month period.
- Episodic attacks of intense nausea and vomiting lasting 1 hour to 10 days and occurring at least 1 week apart.
- Stereotypical pattern and symptoms in the individual patient.
- Vomiting during attacks occurs at least 4 times per hour for at least 1 hour.
- Return to baseline health between episodes.
- Not attributed to another disorder.

Rome III criteria for functional GI disorders have Diagnostic and Supportive criteria.[3] All of the following diagnostic criteria should be present for the diagnosis of cyclic vomiting.

- Stereotypical episodes of vomiting regarding onset (acute) and duration (less than one week)
- Three or more discrete episodes in the prior year
- Absence of nausea and vomiting between episodes
- Supportive criteria is a history or family history of migraine.

Pathogenesis of CVS remains unknown. It is mostly linked to migraine. More than 80% of affected children have a 1st degree relative with migraine and many develop migraine later in life. Up to 80 percentage of the affected children respond to anti-migraine therapy. It is suggested that sympathetic autonomic dysfunction may be responsible for CVS and migraine.

CVS has also been linked to autonomic dysfunction, mitochondrial disorders, hypothalamic-pituitary-adrenal activation and food allergy.[4] Children with CVS have been found to have augmented sympathetic tone and normal to low parasympathetic tone. In mitochondrial disorders, metabolic crisis with vomiting can be the presentation. Some girls develop catamenial CVS (endocrinal) at the onset of their menstrual period. Other causes are food allergy and chronic cannabis use.

Patients can have a prodrome of nausea, pallor, intolerance to noise or light, lethargy or headache. Epigastric pain, abdominal pain, diarrhoea and fever may also be present.[5]

An attempt should be made at identifying a precipitating factor and if found, should be avoided. Precipitating factors include physical exhaustion, motion, fasting, infection, psychological stress or certain foods like chocolate and cheese.[6]

Treatment during the acute phase is supportive, with rehydration and anti-emetics. Hospitalisation may be often be required. A multidisciplinary approach involving a supervising gastroenterologist, the local primary care giver, as well as nursing support and a psychologist, is useful for management of CVS in children.[7]

Prophylactic treatment can be started based on the frequency and severity of the attacks. Those patients with a higher frequency (e.g. >one episode per month) and greater severity of episodes (e.g. recurrent ER visits and/or hospitalizations, frequent absence from school or work, failure to respond to abortive therapy) are most likely to benefit from prophylactic treatment. Drugs used for prophylaxis are anti-migraine drugs (ex: propranolol, sumitriptan), anti-convulsants (ex: phenobarbitone, topiramate), tricyclic anti-depressants (ex: amitriptyline) prokinetics (ex: erythromycin).[8,9,10]

CONCLUSION

Cyclic vomiting syndrome has become an increasingly recognised disorder. It should be suspected when a patient is brought to the office or out-patient department multiple number of times for vomiting. Cyclic vomiting syndrome is a diagnosis of exclusion. The NASPGHAN and Rome III criteria can be used for diagnosis. Prophylaxis should be started when appropriate. Early diagnosis and management will improve the quality of life of the affected patients. Importance should be given to recognition of associated factors and efforts should be taken to correct those. Since malnutrition is a complication of the disease due to its chronicity, hence ensuring appropriate nutrition should be a part of management plan. Episode diary can be maintained which will be helpful for long term follow up.

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