

Relationship of socio-cultural practices to orbital cysticercosis

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Abstract

Introduction: Cysticercosis is related to poor food hygiene, cooking practices, source of water, sanitation.

Aim: To identify annual distribution and socio-cultural practices associated with incidence of orbital cysticercosis.

Method: Retrospective analysis of 218 patients. Data included water source, residence, family income, dietary habits, preceding social event, time of presentation.

Result: 56.88% from rural areas, 60.09% vegetarians, 50.00% used government water supply. Annual family income < Rs 35000 in 70.18%, preceding social events in 94.49%. Annual biphasic peak of incidence was noted.

Conclusion Association of orbital cysticercosis with social events can be utilized for implementing preventive measures.

Keywords: Cysticercosis, social events, Biphasic peak.

Introduction

Orbit is a less preferred site for parasitic infestation. The orbital invaders are *Taenia solium* (cysticercosis), *Echinococcus granulosus* (Hydatid cyst) and *Wuchereria bancrofti* (Filariasis) in order of frequency.^(1,2) Parasitosis is related to poor personal and food hygiene, that is affected by source of water supply, cooking and washing practices and sanitation. In India it is considered a preventable endemic disease.^(3,4,5,6)

Orbital parasitosis is a potentially sight threatening condition due to proptosis, exposure keratopathy and restrictive myopathy. In cases of Cysticercosis, extraocular muscles are the most favored site of cyst lodgment followed by orbital fat.^(7,8) However, published literature reveals that no site is spared.⁽⁹⁾

The authors noted an annual biphasic increase in the incidence of orbital cysticercosis. Such variation was not seen with hydatid and filarial involvement. Description of time distribution of orbital parasitosis does not appear in published indexed English medical literature. The authors conducted the study with the aim of ascertaining the factors causing the biphasic peak in incidence of cysticercosis.

Aim

To identify the annual distribution and the socio-cultural practices associated with the incidence of orbital cysticercosis.

Methods

Study was conducted according to tenets of Helsinki after approval from the Institutional Ethics Committee. A retrospective case record analysis of all consecutive patients diagnosed as orbital cysticercosis, in Oculoplastics and Orbit Unit, Department of Ophthalmology, King George's Medical University, Lucknow, India over a 10-year period from January

2006 to December 2015 was conducted. Data collected included the age of patients, source of drinking water, residence (according to latest census, rural area-population of <5000, density of population <400 per square kilometer and >25% of the male working population is engaged in agricultural pursuits. Urban area- population of >5000, 75% of the male working population is engaged in non-agricultural and allied activity and density of population >400 per square kilometer), education of the food handler, family income, dietary habits, social event preceding diagnosis, time lag between event and presentation, the month of year in which presentation occurred (Table 1-2).

Table 1: Demographic data

Gender	No. of patients
Male	111
Female	107
Residence	
Urban	94 (43.11%)
Rural	124 (56.88%)
Dietary Habits	
Vegetarian (Consumption of salads, raw fruits and vegetables)	131 (60.09%)
Non-vegetarian	87 (39.90%)
Water source	
Municipal water supply	109 (50.00%)
Underground water	90 (41.28%)
Natural water source	19 (8.71%)
Education of the food handler	
< 8 th standard	179 (82.11%)
> 8 th standard	39 (17.88%)
Family Income (annual)	
< Rs 35000	153 (70.18%)

>Rs 35000	65 (29.81%)
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Table 2: Social event preceding presentation

Social Event	No. of patients	Duration between presentation and the event (in weeks)	Month of presentation
Marriage party	124 (56.88%)	8-10	January-February
Child birth ceremony	69 (31.65%)	6-12	August-September
Naming ceremony	13 (5.96%)	6-10	August-September
Others	0(0%)	-	-
No preceding event	12(5.50%)	-	Varied

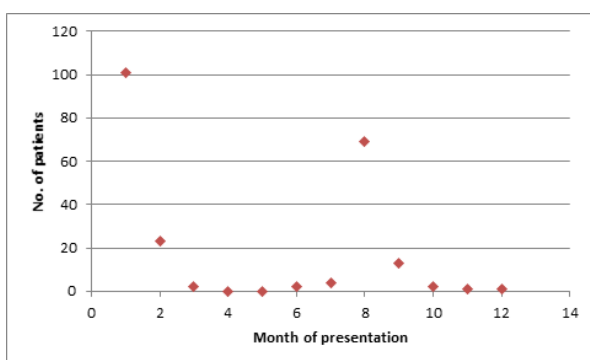


Fig. 1: Biphasic Peak in January-February and August-September

Result

Record analysis of 218 patients was done. Age of the included patients ranged from 5 to 55 years with median age of 15years. No sex predilection was observed.

56.88% patients were from rural areas. 60.09% subjects were vegetarians. Municipal corporation water supply was used for consumption by 50.00% of the patients. The food handler of the family of 82.11% patients had education of less than 8th standard. Annual family income was less than Rs. 35000 in 70.18% patients.

Social events (marriage party, childbirth ceremony, naming ceremony) preceded the presentation in 94.49% patients while 5.50% patients did not have any preceding social event. These events were seen to be occurring about 6-12 weeks prior to presentation of the disease. An annual biphasic peak of incidence was noted in the months of January- February and August – September. No such variation was noted in patients who did not attend a preceding social event.

Discussion

Orbital parasitosis poses a potentially significant ophthalmological morbidity, however, information on their sociocultural drivers is significantly lacking. Factors crucial to understanding and controlling these diseases are the influence of culture on food-consumption practices (improper cooking of non-vegetarian food, using vegetables and salads without proper washing), unavailability of clean drinking water and poor personal hygiene.

In our analysis of 218 patients, age ranged from 5-55 years suggesting that parasitic infestation was not restricted to a particular age group. 57% patients belonged to rural area where sanitation practices were inadequate, and food practices included consumption of raw vegetables and fruits directly from the fields or orchard. This could have a crucial role in causing parasitic infestation. This is also supported by the observation that municipal supply water was utilized for consumption by 50% of the patients. Lack of awareness of proper disinfection regime and presence of leaking taps and pipes could be contributors towards the disease. 60.09% patients having a vegetarian diet, belonged both to the rural and urban community. The high incidence among vegetarians could be multifactorial, the factors being inadequately washed food items, open field defecation practices and contaminated water supply. Also the educational status of 82.11% of food handlers (majority were women of the family) was below 8th standard. This lead to their lack of awareness and apathy regarding proper cooking and dietary habits and maintenance of adequate personal hygiene. 70.18% patients had low annual family income, thus acting as an impediment to the availability of basic provisions necessary for sanitation and hygiene.

An annual biphasic increase in the incidence of orbital cysticercoses was observed in the months of January- February and August- September. These peaks corresponded to a time lag of approximately 6-12 weeks from common social events like marriages, child birth or naming ceremony which the patient attended. In India, marriages are conventionally fixed based on auspicious days that correspond to major festivals and beliefs. These are large scale social events both in rural and urban settings. The financial limitations, clubbed with lack of availability of clean water, apathy towards hygiene and sanitation become contributors to the orofaecal contamination of the food and drinking water during these events. The increased incidence after a period corresponding to their incubation period after possible exposure explains the biphasic peak.

The annual distribution profile of cases of orbital cysticercosis can help identify the factors related to the increased incidence, thus help in adapting preventive measures for prevention, specific to each region. A systematic review has been done by Garcia et al⁽⁹⁾ to focus on the socio-cultural dimensions of Chagas disease. The authors suggested transdisciplinary

approaches (preventive and treatment activities) and populations' living conditions and their culturally informed understandings of health, to be a tool to reduce Chagas disease incidence. Similarly a multidimensional approach can be adapted as a potential tool for the development of long-term successful programs for the prevention and treatment of orbital cysticercosis.

Conclusion

Parasitosis is an important public health problem in India. Sociocultural practices, poor personal hygiene and environmental sanitation promote transmission of the disease. The association of orbital cysticercosis with the social events can be utilized for implementing the necessary preventive measures.

References

1. Kaliaperumal S, Rao VA, Parija SC. Cysticercosis of the eye in south India-A case series. *Indian journal of medical microbiology*. 2005 Oct 1;23(4):227.
2. Pushker N, Bajaj MS, Chandra M. Ocular and orbital cysticercosis. *Acta Ophthalmologica Scandinavica*. 2001 Aug 1;79(4):408-13.
3. David S, Mathai E. Ocular cysticercosis--a review of 25 cases. *The Journal of the Association of Physicians of India*. 2000 Jul;48(7):704-7.
4. Prasad A, Gupta RK, Pradhan S, Tripathi M, Pandey CM, Prasad KN. What triggers seizures in neurocysticercosis? A MRI-based study in pig farming community from a district of North India. *Parasitology international*. 2008 Jun 30;57(2):166-71.
5. Bhardwaj S, Singh A, Ahluwalia C, Mandal AK. Cysticercosis of breast presenting as a breast lump: cytological diagnosis of a rare case. *Annals of Pathology and Laboratory Medicine*. 2016 Jul 28;3(3):L13-14.
6. Prasad KN, Prasad A, Gupta RK, Pandey CM, Singh U. Prevalence and associated risk factors of *Taenia solium* taeniasis in a rural pig farming community of north India. *Transactions of the Royal Society of Tropical Medicine and Hygiene*. 2007 Dec 1;101(12):1241-7.
7. Wani MA, Banerji AK, Tandon PN, Bhargava S. Neurocysticercosis some uncommon presentations. *Neurol India*. 1981;29:58-63.
8. Saigal RK, Sandhu SK, Sidhu PK, GUPTA K. Cysticercosis in Patiala (Punjab). *Journal of postgraduate medicine*. 1984;30(1):46-8.
9. Pushker N, Bajaj MS, Chandra M. Ocular and orbital cysticercosis. *Acta Ophthalmologica Scandinavica*. 2001 Aug 1;79(4):408-13.
10. Ventura-Garcia L, Roura M, Pell C, Posada E, Gascón J, Aldasoro E, Muñoz J, Pool R. Socio-cultural aspects of Chagas disease: a systematic review of qualitative research. *PLoS Negl Trop Dis*. 2013 Sep 12;7(9):e2410.