Original Article

Mortality In Thalassemic Patients From Solapur District, Maharashtra State, India

Nikam S. V.[1], Dama S. B.[1], Chondekar R.P.[1], Dama L. B.[2] , Jawale C. S.[3]

Abstract

Objective: The aim of the present study is to surveying the mortality in thalassemic patients from Solapur District, Maharashtra State, India. ***Methods:*** Present observational survey study, one hundred twenty five clinically proved by their medical reports, cases of thalassemic children's with age 6 months to 18 Years, coming for to get blood transfusion from different parts of Solapur district. ***Results:*** The results indicates that the increased mortality during 11-15 years of age. As a result, transfusional iron overload can cause increased morbidity and premature mortality in thalassemia patients. This study will be helpful in further defining the morbidity and mortality in thalassemic patients.

Key words: Inherited blood disorder, Mortality, Thalassemia

Introduction

Thalassemia is the name of a group of genetic, inherited blood disorder passed down through families in which the body makes an abnormal form of hemoglobin, the protein in red blood cells that carries oxygen. It results in excessive destruction of red blood cells, which leads to anemia. It is not infectious and cannot be passed from one individual to the other by personal or any other contact, or through blood transfusion, food or air (Wikipedia, 2008). Individuals with thalassemia major have severe anemia and hepatosplenomegaly. Without treatment, affected children have severe failure to thrive and shortened life expectancy. Treatment with a regular transfusion program, chelation therapy, bone marrow transplantation and medication aimed at reducing transfusion iron overload, allows for normal growth and development and extends life expectancy into the third to fifth decade (Gene Reviews, 2009). Thalassemia is a major health problem, placing an immeasurable emotional, psychological and economic burden on millions of people around the World (Panos, 2005; Riewpaiboo et al. 2010). Recent data indicate that about 7% of the World's population is a carrier of a hemoglobin disorder and that 300,000-500,000 children are born each year with the severe homozygous states of these diseases (WHO-March of dime, 2006). The carrier rate for beta thalassemia gene varies from 1 to 3% in Southern India to 3% to 15% in Northern India. Certain communities in India, such as Punjabis and Sindhis from Northern India, Kutchis, Bhanushali's, Lohana's from Gujarat, Neobuddhist's, Koli's and Agri's, Lingayat's from Maharashtra have a higher carrier rate (Verma et al., 1992; Mhaskar et al., 1997). The present study includes surveying the mortality in thalassemic patients from Solapur District, Maharashtra State, India.

Materials And Methods

Geographical distribution of Thalassemia.

The geographical regions of Solapur District, Thalassemia analyzed (Figure -I) in the framework research work:

i) Akkalkot ii) Barshi iii) Karmala iv) Madha v) Malshirus vi) Mangalveda vii) Mohol viii) North Solapur ix) Pandharpur x) South Solapur xi) Sangola xii) Solapur City

1. Nikam S. V.
2. Dama S. B.
3. Chondekar R.P.

Department of Zoology, Dr. Babasaheb Ambedkar Marathwada University, Aurangabad-431001, Maharashtra, India.

4. Dama L. B. Department of Zoology, D. B. F. Dayanand College of Arts and Science, Solapur -413002, Maharashtra, India.
5. Jawale C. S. Department of Zoology, HPT Arts and RYK Science College, Nashik-422005, Maharashtra, India.

Corresponds: Dama Laxmikant Basavraj, Department of Zoology, D. B. F. Dayanand College of Arts and Science, Solapur -413002, Maharashtra, India.

Types of Thalassemia	Sex (Total patients)	Mortality			
		6 Months to 5 Years	6 Years -10 Years	11 Years- 15 Years	16 Years to 18 Years
SCT	M (1)	00	00	00	00
	F (0)	00	00	00	00
	Total (1)	00	00	00	00
BTI	M (12)	00	00	00	01
	F (4)	00	00	02	00
	Total (16)	00	00	02	01
BTMi	M (6)	00	01	00	00
	F (4)	00	00	00	00
	Total (10)	00	01	00	00
TM	M (54)	0	04	03	01
	F (44)	00	00	03	03
	Total (98)	00	04	06	04
Total patients (%)	M (73)	00 (0.00)	05 (6.84)	03(4.10)	02 (2.73)
	F (52)	00 (0.00)	00 (0.00)	05 (9.61)	03 (5.76)
	Total M+F (125)	00 (0.00)	05(4.0)	08 (6.4)	05 (4.00)

All individuals were non-related and their selection depended on their well-defined phenotypes, transfusion-dependency, and geographical origins.

Thalassemia patients

Present observational survey study, one hundred twenty five (Male =73, Female =52) clinically proved by their medical reports, cases of thalassemic children's with age 6 months to 18 Years, coming for to get blood transfusion from different parts of Solapur district, Maharashtra State during August 2008 to July 2010. The age at commencement of transfusion was more than six months and the intervals between the transfusions were at least 3 weeks. Information of each patient regarding their age and sex was noted at the time of sample collectionThe entire survey study was carried out under the observations of Medical officer from Thalassemia transfusion centre, Indian Red Cross Society, Gopabai Damani Blood Bank, Solapur Maharashtra, India.

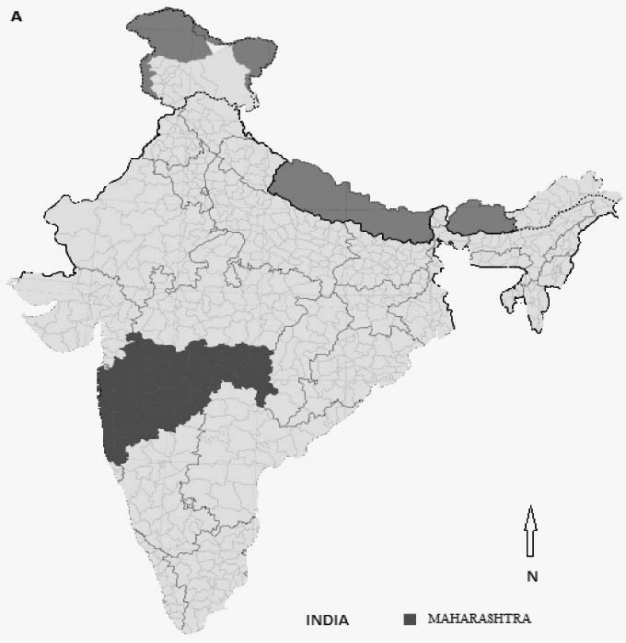
The study population consisted of one hundred twenty five, cases of Thalassemia children attending for regular blood transfusions in the following blood banks and hospitals collaborating in this multicentre study were carried out, with prior written consent from the parents/ guardians.

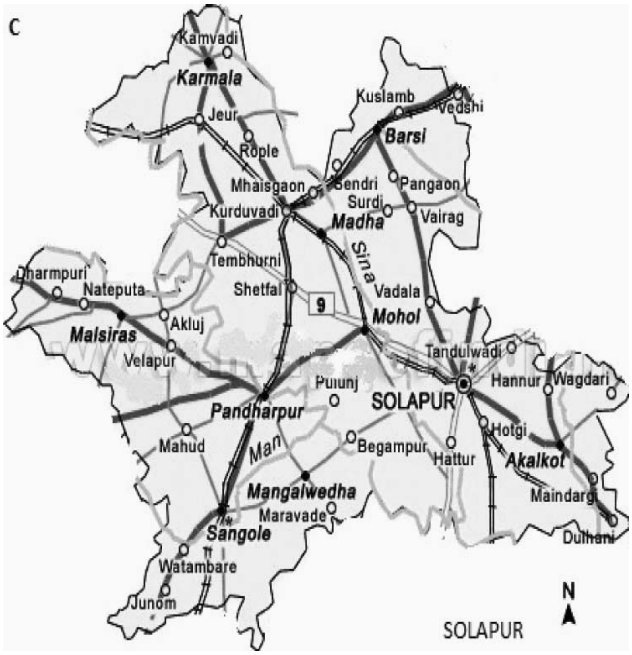
1) Indian Red Cross Society, Gopabai Damani Blood Bank, Thalassemia Centre, Solapur.
2) Hedgewar Blood Bank, Solapur
3) M/s Indian Red Cross Society Blood Bank, Sub Branch Sou Sarjubhai Bajaj Blood Bank, Pandharpur, District-Solapur.
4) Shriman Rambhai Shah Blood Bank, Sub Branch, Indian Red Cross Society, Barshi, District- Solapur.
5) Chatrapati Shivaji Rugnalaya, Government Hospital, Solapur.

Results and Discussion

The mortality rates of study patients were also examined during the study period (Table-1 and Figure-1 and Figure 2) showing probably age specific mortality. In 6-10 years the mortality rate was: male 5(6.84%); female (0.00%); total 5(4%). The mortality rate was: male 3(3.10%); female 5(9.61%); total 8(6.4%) in age between 11-15 Years and 16-18 years: male 2(2.73%); female 3(5.76%); total 5(4%). This leads to increased mortality during 11-15 years of age. As a result, transfusional iron overload can cause increased morbidity and premature mortality in thalassemia patients. This study will be helpful in further defining the morbidity and mortality in thalassemic patients.

The results compared with the findings of the Olivieri and Brittenham (1997); Borgna-Pignatti (2005) and Darbari et al. (2006). The greater the transfusion requirement, the greater the risk of premature mortality was observed during the study. The only way to prevent the disease and reduce the morbidity and mortality is by educating the patients and





parents. For this reason in this present study, awareness among parents of thalassemic patients regarding the disease was evaluated. Epidemiological transition caused by improvements in hygiene, nutrition, proper medication, blood transfusions and control of infection that has reduced childhood mortality.

Acknowledgements

The authors thank Dr. P.K. Joshi, Secretary and Dr. Rajiv Pradhan, Joint Secretary for their excellent technical assistance as well as the doctors and technicians of Smt. Gopabai Damani Blood Bank (Indian Red Cross Society) Solapur for their help in blood collection during this study. The authors also thanks to Head, Department of Zoology, Dr. Babasaheb Ambedkar Marathwada University, Aurangabad- 431001, Maharashtra, India.

References

1. Borgna-Pignatti C, Cappellini MD, De Stefano P, Del Vecchio GC, Forni GL, Gamberini MR, Ghilardi R, Origa R, Piga A, Romeo MA, Zhao H and Cnaan A. Survival and complications in thalassemia. Ann N Y Acad Sci. 2005; 1054:40-7.

2. Darbari DS, Kple-Faget P, Kwagyan J, Rana S, Gordeuk, VR, Castro O. Circumstances of death in adult sickle cell disease patients. *Am J Hematol* 2006; **8**: 858-63.

3. GeneReviews.2009 :http://www.ncbi.nlm.nih.gov/bookshelf/br.fcgibook=gene&part=a-thal. 2009.

4. Manglani M, Lokeshwar MR, Vani VG, Bhatia N, Mhaskar V. 'NESTROFT' - an effective screening test for b-Thalassemia trait. *Ind Pediatr* 1997; **34**:703-8.

5. Olivieri NG, Brittenham GM. Iron-chelating therapy and the treatment of thalassemia. *Blood.* 1997; **89**:739-61.

6. Panos Englezos. Prevention of Thalassaemias and Other Haemoglobin Disorders. Published by Thalassaemia International Federation, Cyprus. 2005; 2.

7. Riewpaiboo A, Bunyadharokul S, Chaikledkaew U, Torcharus K. Budget impact of the thalassemia management under the national health security scheme in Thailand. *Mahidol Univ J Pharmaceut Sci.* 2010; **37**(1-2): 28-39.

8. Verma IC, Choudhry VP, Jain PK. Prevention of thalassemia: *A necessity in India. Ind J Pediatr.* 1992; **59**: 649-54.

9. WHO/March of Dimes. Report of a joint meeting. 2006; 206, 5-15.Wikipedia.URL: http://en.wikipedia.org/w/index.php?title=Thalassemia& action=edit. 2008.