



β THALASSEMIC PATIENTS; GINGIVAL STATUS OF β THALASSEMIC PATIENTS IN POPULATION OF KARACHI PAKISTAN.

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ABSTRACT...Introduction Thalassemia is a worldwide disease. 5-8% of Pakistani population (approx. 8 –10 millions) are carrying thalassemia genes. It causes various abnormalities indifferent organs of patients. In Pakistan (to the best of our knowledge) no research work on oral and maxillofacial manifestation had been carried out, therefore present study was under taken. **Objectives:** The aim of this study was to evaluate the frequency of gingival status Thalassaemic patients and correlate with age. **Study Design:** Cross Sectional, Observational, Non Therapeutic **Setting:** Abbasi Shaheed Hospital Karachi with collaboration of Husaini Institute of Blood Diseases Karachi, Fatimid Foundation and National institute of Oral Diseases Karachi Pakistan. **Period:** 2 years June 2013 to June 2015. **Methods and Materials:** 200 diagnosed β-thalassaemia major patients, were randomly selected from the Patients who were registered for their treatment. Their clinical examination and percentage of recorded feature were calculated and cross tabulated with age and GI Index were used for evaluation of Gingivitis and result were deduced. **Results:** The most prominent features recorded were gingivitis in 83.5 normal patients were 16.5, Mild Gingivitis 39% %; Moderate Gingivitis 37 %; Severe Gingivitis in 7.5%. **Conclusion:** The increase in severity of Gingivitis increases with age and duration, necessitate regular surveillance and counselling in order to reassure the patient, reduce gingivitis in thalassaemia patients and improve the overall condition and life style of Patients.

Keywords: Gingival Health, Karachi, Thalassemia.

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INTRODUCTION

Thalassemia is an inherited single gene (β-thalassaemia) or multiple genes (α-thalassaemia) recessive, autosomal blood disease, where haemoglobin is totally absent or partially produced.^{1,2,3}

It is very common in Mediterranean region.⁴ Haemoglobin is composed of four protein chains, two α-globin chains and two β-globin chains arranged in a hetro-tetramer.⁵ Patient suffering from thalassaemia defects occur in either α or β-globin chain which produced abnormal red blood cell. In β-thalassaemia mutations occur in the HB β-gene at chromosome No11, and severity of the disease depends on the nature of the mutation. According to severity it is classified in three sub classes. I) Thalassaemia major; II) Thalassaemia intermediate; III) Thalassaemia minor (Severity of disease depends upon the

amount of α-globin. However in each sub class tetramer do not form and they bind to the red blood cell membranes, causing damage to membrane. Furthermore at high concentrations they form toxic compounds.^{6,7,8,9,10,11} In α-thalassaemia two genes HB α₁ and HB α₂ at chromosome No16 are involved and inherited, resulting excess of β-globin chains in adults and excess γ-globin chains in newborn babies. The excess β-chains form unstable tetramers, which are characterized by abnormal oxygen dissociation curves.^{2,12,13} Generally haemoglobin, is composed of α and β-chains, however approximately 3% of adult haemoglobin is made of α and Δ chains. Mutations also effect the production of Δ-chains.¹³ The general manifestations in thalassaemic patients are due to lack of total or partial production of α or β globin chain, causes serious effects on their bodies, details of effects has been fully discussed by many

worker.^{2,3,7,8,14,15}β-thalassemia is also responsible of causing various manifestations and complications of various degrees on different organs of patients.^{1,16,17,18,19,20,21,22,23,24,25}In β- thalassemia, the oral and maxillofacial manifestation has been reported in several reports.^{14,16,17,18,22,24,26}

MATERIALS AND METHODS

Present study is carried out in the Husaini blood bank and Institute of Haematological diseases Karachi, Fatmid blood bank and thalassemia Centre Karachi, National institute of oral diseases Karachi and Department of oral and maxillofacial Surgery Abbasi Shaheed Hospital, Karachi,. The study based on 200 proved β- thalassemia patients coming for regular blood 34 Fatmid blood bank and thalassemia centre Karachi and 50 patients for radiological studies

Methods for Collecting Data

Patients enrolled for study also fulfilled the inclusion and exclusion criteria, and statistical analysis of data in IBM SPSS version 23.

Inclusion Criteria

Thalassemic patient with/ without any systemic or dental disease.

Exclusion Criteria

Patients suffering from other diseases like diabetes mellitus or Down’s syndrome known to influence dental caries or other oral manifestations have not been included in the present study.

Material

Following apparatus were used to carry out the research

Clinical Studies

Physiologic dental chair with provision for artificial illumination, water jet and compressed air pressure facility; 2) Mouth mask; 3) Hand gloves; 4) Mouth mirror; 5) Straight probe; 6) Tweesor; 7) Kidney tray; 8) Cotton; 9) 0.2% Chlorohezidine mouth wash; 10) Water; 11) Autoclave; 12) Digital camera

Approval

Faculty of medicine University of Karachi (2012

- 2016), approved by board of advanced studies and research karachi and ethical and research committee Karachi Medical and Dental College Karachi. This study is the part of M.S. oral surgery thesis from University of Karachi Pakistan.

STUDY TYPE

Cross Sectional, Observational, Non Therapeutic

Duration

2 years June 2013 to June 2015

Study Group

5 Years to 35 Years

3 Groups

FUNDING

Self funded

Diagnostic and Score Criteria for Gingivitis Loe (Gingival index)

Löe (1967)²⁷gingival index, the plaque index and the retention index Systems. 253 Journal of Periodontology 38(6, II) 610-616
0 Normal

1. Slight edema slight change in colour -No bleeding on probing. Mild inflammation.
2. Edema, redness, and glazing. Bleeding on probing- Moderate inflammation.
3. Edema and marked redness -Tendency to spontaneous- Severe inflammation. Ulceration.,bleeding.

RESULTS

Out of 200 patients, 33 patients (16.5 %,) are normal (without gingivitis) and (83.5%) have gingivitis, detail of which are:- 78 patients (39%) have mild gingivitis, 74 patients (37%) have moderate gingivitis, and 15 patients (7.5%) have severe gingivitis.

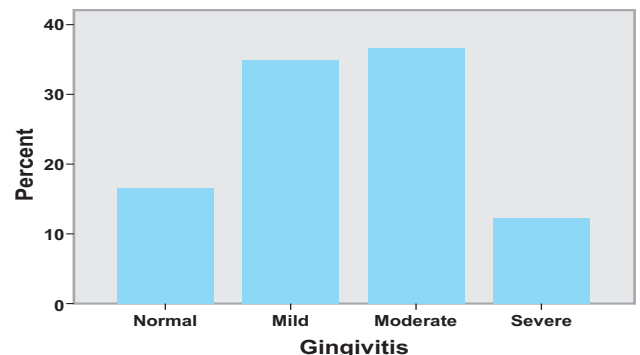


Figure-1. Gingivitis (bar graph A)

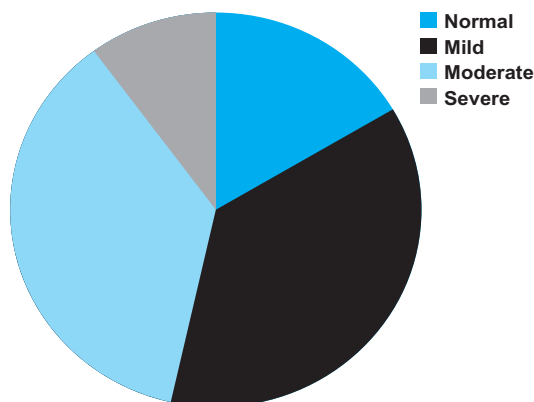


Figure-2. Gingivitis (Pie graph b)

Gingivitis	No. of Patients	Percent	Percent	Cumulative Percent
Normal	33	16.5	16.5	16.5
Mild	78	39.0	39.0	55.5
Moderate	74	37.0	37.0	92.5
Severe	15	7.5	7.5	100.0
Total	200	100.0	100.0	

Table-I. Gingivitis

Age group and versus gingivitis (Table-II)

Gingivitis		Normal	Mild	Moderate	Severe	Total	
Age	5-15	Count	17	28	24	3	72
		% within Age	23.6%	38.9%	33.3%	4.2%	100.0%
	16-25	Count	13	41	37	10	101
		% within Age	12.9%	40.6%	36.6%	9.9%	100.0%
	26-35	Count	3	3	11	10	27
		% within Age	11.1%	11.1%	40.8%	37.0%	100.0%
Total		Count	33	72	72	23	200
		% within Age	16.5%	36.0%	36.0%	11.5%	100.0%

Table-II. Age groups versus gingivitis cross tabulation



Figure-(A)

Figure-(B)

Figure-(C)

Photograph (A-C) (A), shows heavy deposition of plaque and calculus and marked swelling of gingiva and muddy black colour of oral mucosa, (B) shows Spacing between the teeth (C)Shows Mal align teeth with heavy deposition of plaque and calculus.

I) Age group 5-15 years

Out of 200 patients, 72 patients belong to 5-15 years age group.17 (23.6%) patients have not gingivitis (Normal) and 28(38.9%) have mild gingivitis, 24(33.3%) patients have moderate gingivitis and 3(4.2%) patients have severe gingivitis

II) Age group 16-25 years

Out of 200 patients, 101 Patients belong to 16-25 years age group.13 (12.9%) patients have no gingivitis (normal) and 41(40.6%) have mild gingivitis, 37(36.6) patients have moderate gingivitis and 10(9.9%) patients have severe gingivitis

III) Age group 26-35 years

Out of 200 patients, 27 Patients belong to 26-35 years age group. 3 (11.1%) patients have no gingivitis (normal), 3(11.1%) have mild gingivitis, 11(40.8%) patients have moderate gingivitis and 10 (37.0%) patients have severe gingivitis.

DISCUSSION

Gingivitis and its correlation with age group were studied in 200 patients in the present study. Gingivitis was checked clinically. 33 patients (16.5 %,) are normal, while 78 patients (39%) have mild gingivitis, 74 patients (37%) have moderate gingivitis, and 15 patients (7.5%), have severe gingivitis.

Overall 83.5% patients have gingivitis and 16.5% patients without gingivitis. Grinith et al. (2010)²⁶reported (26%) gingivitis in thalassemic patients. It is three time higher in the present study, probably it is due to betel and betel nut (Pan, Chalia) chewing habits which is adopted due to deep depression and by chewing probably they divert their attention from worries come across daily with such thalassemic patients. Furthermore chewing pan chalia is very common and cultural habit in Pakistan, Bangladesh, Srilanka and India. Pan Chalia are presented at some religious and non religious occasions like Eid-ulaza, Eid-ulfiter, marriages, mahafil and mala etc. At festival pan stall are established and decorated and people enjoyed with it without knowing its harmful effects.

In age group 5-15, out of 200 patients studied and cross tabulated. Patients without gingivitis are 17(23.6%), with mild gingivitis 28(38.9%), with moderate gingivitis 24(33.3%) and with severe gingivitis 3(4.2%).In age group 5-15, over all (23.4%) patients are normal and (76.6%) patients have gingivitis. Gingivitis in age group16-25 is recorded and cross tabulated. Normal patients13 (12.9%), mild 41(39.6%) patients, moderate37 (36.6%) patients, and severe 10 (9.9%) patients. Over all (12.9%) patients normal and (87.9%) having gingivitis. Gingivitisin age group26-35 is recorded and cross tabulated. Patients without gingivitis are 3 (11.1%), mild 3 (11.1%) patients, with moderate 11 (40.7%) patients, and severe 10 (37.0%) patients.Over all 11.1% patients are

normal and 88.9% having gingivitis. Data from study shows that in age groups 5-15, 16-25 and 26-35years patients having gingivitis76.4%, 87.9% and 88.9% respectively. This clearly shows that as age increases, % of patients having gingivitis also increased.

Increase in age^α increase in % of patients having gingivitis

CONCLUSION

Overall 83.5% patients have gingivitis and 16.5% patients without gingivitis. Girinath et al. (2010)²⁶reported 26 % gingivitis in thalassemic patients. It is three time higher in the present study, probably it is due to betel and betel nut (Pan, Chalia) chewing habits which is adopted due to deep depression and by chewing probably they divert their attention from worries come across daily with such thalassemic patients. Furthermore chewing pan chalia is very common and cultural habit in Pakistan, Bangladesh, Srilanka and India. Pan Chalia are presented at some religious and non religious occasions like Eid ulaza, Eid ulfiter, marriages, mahafil and majalis etc. At festival pan stalls are established and decorated and people enjoyed with it without knowing its harmful effects.

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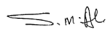
REFERENCES

1. Cooley, T.B. and Lee, P. **A series of cases of splenomegaly in children with anemia and peculiar bone changes.**Trans.American Pediatric Society 1925; 37:29-30.
2. Rund, D. and Rachmilewitz, E. **Medical progress β-Thalassemia.** N. E. J. M. 2005; 353 (11):1135-1146.
3. Verma, I. C., Saxena, R.and Kohli, S. **Past, present & future scenario of thalassaemic care and control in India.** Indian J. Med. Res. 2011;134: 507-521.
4. Flint, J., Harding, F. M., Boyce, A. J. and Clegg, J. B.**The population genetics of haemoglobinopathies,**Bailliere;sClin. Haematol1998;11(1): 1-15.
5. Thein, S. L. **Genetic modifiers of Beta- thalassamia.** Haematologia 2005;90: 649-660.
6. Khan, S. N., Riazuddin, S. and Galanello, R. **Identification of three rare Beta-thalassemia mutations in the Pakistani population.**Hemoglobin2000; 24 (1):15-22.

7. Raihan, S., Farooq, G. Salman, A and Mohammad, K. **Thalassemia Major**. Journal of the Pakistan Medical Association 2009; 59(6):388-90.
8. Galanello, R. and Origa, R. **Beta-thalassemia**. Orphanet Journal of Rare Diseases 5:11 J Pak Med Assoc. 2010; 62 (1):40-3.
9. Khan, S. A., S.A., Khattak, A. Jaleel, N.A. Anwar, H.S. Kashif. **Prevalence of various mutations in Beta-thalassaemia and its association with haematological parameters**. J Pak Med Assoc. 2012; 62 (1):40-3.
10. Bejaoui, M. and Guirat, N. **Beta Thalassemia Major in a Developing Country: Epidemiological, Clinical and Evolutionary Aspects**. Mediterr. J. Hematol. Infect. Dis. 2013; 5 (1): 2013002.
11. Kang, J. H., Park, B. R., Kim, K. S. Kim, D. Y., Huh, H. J., Chae, S. L. and Shin, S. J. **Beta-Thalassemia Minor is Associated with IgA Nephropathy**. Ann. Lab. Med. 2013; 3(2): 153-155.
12. Bridge, K. **How do people get thalassemia? Information center for sickle cell and thalassemia disorder**. 1998; ([http / sicklebwh. Harvared.edu/ tha.inheritance.html](http://sicklebwh.harvard.edu/tha.inheritance.html))
13. Patil, S. **Clinical and Radiological study of oro- facial manifestation in Thalassemia. Thesis of Master of Dental surgery in oral Medicine and surgery**. Deptt. of Oral Surgery and Radiology. Bapuji Dental college and Hospital, Davangere, Karnataka, India. 2006; Pp121
14. Van dis, M.L. and Langlias, R.P. **The thalassaemia: Oral manifestations and complications**. Oral surgery, Oral Medicine, Oral Path. 1986; 62:229-223
15. Abdel-Malak, D .S. M., Ola, A. E. D., Mohamed, Y. S. S. and Ahmed, T. S. S. **Ocular manifestations in children with β-Thalassemia major and visual toxicity of iron chelating agents**, Eyes Journal of American Science. 2012; 8(7): 633-638.
16. Chakraborty and Basu, S. P. **Observations on radiological changes of bones in thalassemia syndrome**. J. Indian Medical Association. 1971; 57: 90-95
17. Logothetis, J., Economidou, J., Constantoulakis, M., Augoustaki, O., Lowe, R.B. and Bilek, M. **Cephalofacial deformities in thalassemia major (Cooley's anemia): A corrective study among 138 cases**. American J. Diseases in children. 1971; 121:300-306.
18. Abu Alhajja, E. S. J., Hattab, M.F.N., Al-Qamari M.A. **Cephalometric measurements and facial deformities in subject with β- Thalassemia major**. Euro. J. Orthodon. 2002; 24:9-19.
19. Seyyedi, A. and Nabavizadeh, H. **Epidemiological study of the oral and maxillofacial changes in β-thalassemic patients in Boyer Ahmad township**. Beheshti .Univ. Dent. J. 2003; 21(4): 510-517.
20. Cunningham. M. I., E. A., Macklin, E. J., Neufeld and A. R. Cohen. **Complication of β-thalassemia major in North America**. Blood. 2004; 104: 34-39
21. Hazza, A. M. G. and Al-Jamal. **Radiographic features of the jaws and teeth in thalassemia major**. Dentomaxillofacial Radiology. 2006; 35(4): 283-8.
22. Amini, F., Jafari, A., Eslamian L. and Sharifzadeh, S. **A cephalometric study on craniofacial morphology of Iranian children with β - thalassemia major**. Tehran J. Dent. Univ. Med. Sci. 2007; 16(2): 16-24.
23. Mehdizadeh, M., Mojdeh, M. and Gholamreza, Z. **Orofacial complications in Patients with Major β--Thalassemia**. Dent. Res. J. 2008; 5(1): 17-20
24. Hashemipour, M. S. and Ebrahimi, M. **Orofacial disformation in thalassemia patients referred to Kerman S. J. I. B.** 2008; 5(3): 185-193
25. Rashi, T., Pankaj, M., Mamta, S. and Mahesh, C. I. A. **Multiple transfused thalassemia major: Ocular manifestations in a hospital-based population**. Indian J. Ophthalmol. 2010; 58 (2): 125-130.
26. Girinath, P., Vahanwala, S. P., Krishnamurthy, V. and Pagare, S. S. **Thalassaemic patients: A Clinical study**. J. Ind. Acad of oral Medicine and Radiology. 2010; 22(3):126-132.
27. Löe, H. **1967 The gingival index, the plaque index and the retention index Systems**. Journal of Periodontology 38(6, II) 610-616.



AUTHORSHIP AND CONTRIBUTION DECLARATION

Sr. #	Author-s Full Name	Contribution to the paper	Author=s Signature
1	Syed Muhammad Ali	Main researcher, Writing, Proof reading, Data collection.	
2	Syed Mahmood Haider	Main idea did review guidance, support final approval of manuscript and supervisor of project.	