Impact of Bleeding Disorders: Hemophilia A, B And C on Dental Hygiene in a Sample of Children In Hilla city

Wissam Hamid Edan AL-Janabi **Moukhlad Louay Ali Al-Falluji**
P.O.P department, College of Dentistry , Babylon University
ayatwissam@gmail.com mukhaled_alfalluji@yahoo.com

Abstract

Bleeding tendency is the manifestation of a wide range of abnormalities that can basically classify into two major categories according to etiology; these are the inherited and acquired categories. The pathologic defect resides in one of the three major sequential physiologic processes of blood homeostasis**.** Defects in coagulation include mainly inherited defect in the synthesis of one of the members of factors of coagulation such as factor VIII (Hemophilia A) and factor IX (Hemophilia B) and to a much less extent factor XI (Hemophilia C). The current study aimed to explore the oral health status in a sample of hemophilia male children. The present case control study included 22 children with hemophilia disorders and 50 apparently healthy aged matched control children. The age of hemophilia children ranged from 2-14 years. Dmft and DMFT were assessed and the results showed that patients had significantly higher scores indicating poor oral hygiene.

Conclusion: hemophilia is a predisposing factor for poor dental hygiene and that protective measures should be seriously considered in such population to avoid serious complication following invasive dental procedures.

Key words: Hemophilia, dental health, dmft, DMFT

الخلاصة

نزف الدم الوراثي احد الامراض التي تحدث نتيجة لنقص في تصنيع احد عوامل التخثر ويوجد بثلاث انواع حسب نوعية العامل المفقود. اجريت هذه الدراسة علي مجموعة من الاشخاص الحاملين للمرض باعمار تتراوح مابين (2−14) سنة في مركز الدم الوراثي في بابل . تم فحص نسبة التسوس لهؤلاء الشخاص ومقارنتها مع مجموعة ضابطة ووجد انه هنالك فرق معنوي واضح احصائيا. لذلك الاهتمام بصحة الفم لهؤلاء الشخاص يجنبهم الاصابة بامراض الفم التي من الممكن ان تحتاج الي علاجات صعبة تعرضهم للخطر.

الكلمات المفتاحية: نزف الدم الوراثي ، صحة الفم والاسنان ، تسوس الاسنان

Introduction

Bleeding tendency is the manifestation of a wide range of abnormalities that can basically classify into two major categories according to etiology; these are the inherited and acquired categories **(kruse *et al,* 2014)**. The pathologic defect resides in one of the three major sequential physiologic processes of blood homeostasis; primary platelet plug formation, fibrin formation (coagulation) and platelet plug stabilization **(Van and Peters, 2012)**. Defects in coagulation include mainly inherited defect in the synthesis of one of the members of factors of coagulation such as factor VIII (Hemophilia A) and factor IX (Hemophilia B) and to a much less extent factor XI (Hemophilia C**(Shastry *et al*, 2014 ; Kulkarni and Soucie 2011).** The 2nd half of the last century witnessed a substantial rise in the prevalence and incidence of the disease hemophilia, which may be explained by the adoption of more sensitive diagnostic techniques (**Rodrigues *et al*, 2013).** At the beginning of the last century the incidence of the disease was estimated to be around 4 /100000 males while the present estimation pointed out to the fact that hemophilia is, by far, the most frequent inherited bleeding disorder (**Kar *et al,* 2014**). The most frequent and well known hereditary coagulopathies are hemophilia A and B.

These can be sub-classified as mild (6-50 IU/DL), moderate (1-5 IU/DL) or severe (< 1 IU/DL) on the basis of the presence or deficiency of factors VIII and IX (**Kar *et al,* 2014**). Ranking the third after these disorders is von Willebrand Disease, which is due to a deficiency of the VWF protein, which helps the transport of factor VIII and platelet condensation (**Rodrigues *et al*, 2013)**. These bleeding abnormalities are hemorrhagic states caused by quantitative and/or qualitative deficiencies of single or multiple coagulation factors. These hemorrhagic disorders are encountered in all ethnic groups and geographic sits but higher rates of particular deficiencies are observed in specific ethnic categories (**Kalsi *et al,* 2014).** Referring to researches investigating the dental condition of patients with coagulopathies, these patients tend to neglect their oral health status due to fear of massive bleeding, which requires admission to hospital, due to flossing and brushing their teeth by invasive procedures at the dentist's institutes **(Al Tonbary *et al,* 2013).**

The happening of tooth loss was seen in a certain population of patients with hereditary bleeding diseases including hemophilia worldwide (**Rodrigues *et al,* 2013)**. Tooth loss should be avoided and measures should be undertaken to reduce it in this population because, even though extraction is an easy dental procedure, complications may happen when proper care is not offered that may lead to death by massive bleeding. Thus, the current study aimed to explore the oral health status in a sample of hemophilia male children.

Subjects and methods

The present case control study included 22 children with hemophilia disorders and 50 apparently healthy aged matched control children. The age of hemophilia children ranged from 2-14 years. The study was carried out at bleeding disorder center in Babylon province/ Iraq. Patients were already diagnosed into hemophilia A, B and C and subcategorized into mild, moderate and severe by a pediatric specialty physician. Assessment of dental health status was performed using dmft and DMFT, decayed, missing and filled, primary teeth and decayed, missing and filled permanent teeth, respectively. Statistical analysis was carried out using SPSS version 22.0. Mann Whitney and Kruskal Wallis tests were used and P-value of ≤ 0.05 was considered significant.

Results

Major type of hemophilia was A accounting for 16 out of 22 (72.7 %) followed by B which was seen in 5 patients only (22.7 %) and a single case of C (4.5 %). Mean age of patients was not significantly different from that of control subjects, 8.45 ±3.95 versus 9.01 ± 2.93 years (P>0.05). Male patients were the predominant gender accounting for 20 patients out of 22 (90.9%). Significant difference in mean dmft and DMFT scores was noted between patients and control groups, 5.23 ±2.37 versus 3.33 ±1.27 and 7.27 ±3.87 versus 9.01 ±2.56, respectively; they were higher in patients than in control subjects. No significant association was found with the type or severity of the bleeding disorder (P>0.05), as shown in tables 1, 2 and 3.

Table 1: Demographic characteristics

Characteristics	**Patients (n= 22)**	**Control subjects (n = 50)**	**P-value**
Age; mean±SD (range) years	8.45 ±3.95 (2-14)	9.01 ± 2.93 (3-15)	>0.05
Gender (M:F)	20/2	45/5	>0.05

Table 2: Type of hemophilia and severity of disease

Hemophilia	Number of patients	%
A	16	72.7 %
B	5	22.7 %
C	1	4.5 %
Severity		
Mild	7	31.8 %
Moderate	13	59.1%
Severe	2	9.1 %

Table 3: dmft and DMFT score

Characteristics	dmft	DMFT
Subjects		
Control	5.23 ±2.37	7.27 ±3.87
Patients	3.33 ±1.27	9.01 ±2.56
P-value	**<0.05**	**<0.05**
Hemophilia		
A	5.71 ±2.23	6.89 ±4.01
B	5.12 ±3.09	7.02 ±3.06
C	5.03 ±3.35	7.03 ±3.79
P-value	**>0.05**	**0.05**
Disease severity		
Mild	5.31 ±2.53	6.78 ±4.71
Moderate	5.52 ±3.18	7.49 ±3.33
Severe	5.53 ±3.75	7.33 ±3.91
P-value	**>0.05**	**>0.05**

Discussion

The study sample was mostly male, having Hemophilia A. The predominance of the disorder in males is a direct function of its sex-linked recessive pattern of inheritance and to the well known fact that the type A of the disorder has an incidence of 1:10,000 live births compared to an incidence between 1:40,000 and 1:50,000 for type B and a much rare rate for hemophilia C **(Brasil *et al* , 2011).** For proper assessment of oral health, in the present study, experience and severity of dental caries was assessed using dmft and DMFT, decayed, missing and filled primary teeth and decayed, missing and filled permanent teeth, respectively. The present study showed that mean DMFT and mean dmft were significantly higher in patients with hemophilia than in control healthy subjects a finding similar to what was recorded by a number of published literatures **Sudhanshu and Shashikiran, 2010; Kabil *et al*, 2007).** In another published article in Northern Ireland, a study carried out on 38 hemophilia children; children aged from 2- to 10-year-old had on average, 0.13 decayed teeth and a mean dmft of 0.86, whereas, in the 7- to 15-year age group none had caries and the DMFT was 0.45. The authors attributed such magnificent oral health status to the wealth of the country where the research was carried out, medical services received by the hemophilic children and the centralization of dental services in the hospital, so there was an enormous emphasis on the reduction of the rate of oral cavity disorders (**Boyd and**

Kinirons, 1997). Tooth caries mean number, in the current study, was also significantly higher in patients with hemophilia than in healthy control subjects; this is in accordance with several other authors **(Rodrigues *et al*, 2013)**. A case-control study conducted in Germany investigated the oral health in patients with coagulation disorders compared to healthy individuals. The authors selected patients aged between 18 and 60 years presenting with hemophilia A / B (n = 15). They found no clinically relevant difference between oral health (DMFT) of patients with coagulopathies and the control group. In spite of the good oral hygiene in patients with coagulopathies, the authors found a mean DMFT of 18 **(Ziebolz *et al* 2013)**.

In conclusion: hemophilia is a predisposing factor for poor dental hygiene and that protective measures should be seriously considered in such population to avoid serious complication following invasive dental procedures.

References

Al Tonbary Y, ElAshry R, El Sayed Zaki M. Descriptive Epidemiology of Hemophilia and Other Coagulation Disorders in Mansoura, Egypt: Retrospective Analysis. Mediterranean Journal of Hematology and Infectious Diseases. 2010;2(3):e2010025.

Boyd D, Kinirons M. Dental caries experience of children with haemophilia in Northern Ireland. Int J Paediatr Dent. 1997;7(3):149–153.

Brasil. Ministério da Saúde. Secretária de Atenção à Saúde. Departamento de Atenção Especializada. Coordenação-Geral de Sangue e Hemoderivados . Manual de reabilitação em hemofilia [Internet] Brasília: Ministério da Saúde; 2011. [cited 2012 Jun 21]. Available from: http://bvsms.saude.gov.br/bvs/publicacoes/manual_reabilitacao_hemofilia.pdf.

Kabil N, ElAlfy MS, Metwalli N. Evaluation of the oral health situation of a group of Egyptian haemophilic children and their re-evaluation following an oral hygiene and diet education programme. Haemophilia. 2007;13(3):287–292. Erratum in: Haemophilia. 2011;17(6):979.

Kalsi H, Nanayakkara L, Pasi KJ, Bowles L, Hart DP. Acess to primary dental care for patients with inherited bleeding disorders. Haemophilia. 2012;18(4):510–515.

Kar A, Phadnis S, Dharmarajan S, Nakade J. Epidemiology & social costs of haemophilia in India. The Indian Journal of Medical Research. 2014;140(1):19-31.

Kruse-Jarres R. , Singleton T. C.and Leissinger C. A. Identification and Basic Management of Bleeding Disorders in Adults J Am Board Fam Med July-August 2014 27:549-564.

Kulkarni R, Soucie JM. Pediatric hemophilia: a review. Semin Thromb Hemost. 2011;37(7):737–744.

Rodrigues LV, Moreira M dos SC, de Oliveira CR, de Medeiros JJ, Lima E de A, Valença AMG. Tooth loss and associated factors in patients with coagulopathies in the State of Paraíba, Brazil. *Revista Brasileira de Hematologia e Hemoterapia*. 2013;35(5):319-324.

Shastry SP, Kaul R, Baroudi K, Umar D. Hemophilia A: Dental considerations and management. Journal of International Society of Preventive & Community Dentistry. 2014;4(3):S147-S152.

Sudhanshu S, Shashikiran ND. Prevalence of Dental Caries and Treatment Needs Among Hemophilic Children of Kota City, Rajasthan. Ann Ess Dent Andhra Pradesh. 2010;2(2):18–21.

van Ommen CH, Peters M. The bleeding child. Part I: primary hemostatic disorders. Eur J Pediatr. 2012;171(1):1–10.

Ziebolz D, Stühmer C, Hornecker E, Zapf A, Mausberg RF, Chenot JF. Oral health in adult patients with congenital coagulation disorders - a case control study. Haemophilia. 2011;17(3):527–531.