Research Article

Knowledge and Awareness among Dental Undergraduate Students Regarding Dental Management of Patients with Haemophilia

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ABSTRACT

The aim of the study was to assess the knowledge and awareness of dental undergraduate students regarding dental management of patients with haemophilia. A self-administered structured questionnaire consisting of 21 questions on knowledge, attitude and awareness regarding dental management of patients with haemophilia was distributed among 100 students randomly belonging to third year, final year and intern students of saveetha dental college, saveetha university, chennai. The data extracted were tabulated, statistically analyzed and results obtained. 78% of the students were aware of the clinical manifestations of haemophilia and 86% of the students knew about the drugs that are contraindicated in haemophilia patients. 61% and 53% of the students respectively answered that they were not aware of the pre-operative and post-operative precautions that are required to be taken. Most of the dental students had good knowledge about haemophilia and dental management of patients with haemophilia except for few aspects in treatment. Overall, majority of the students showed positive attitudes towards learning about dental management of patients with bleeding disorders. More emphasis should be made in the dental curriculum regarding the treatment protocol for the management of bleeding episodes in the dental office, especially for the medically compromised patients and those with bleeding disorders.

Keywords: Haemophilia A, Haemophilia B, factor VIII, factor IX, Tranexamic acid, Knowledge, Dental students, Bleeding, Dental management.

INTRODUCTION

The common bleeding disorders are classified as Coagulation factor deficiencies, platelet disorders, vascular disorders and fibrinolytic disorders. Systemic diseases can also be the responsible for the pathogenesis of coagulopathies or bleeding disorders such as;

- Renal failure and uraemia caused by Diabetes mellitus, Glomerulonephritis, Pyelonephritis, Hypertension.
- Hepatic failure due to Hepatitis B and C, alcohol abuse, Hepatocellular carcinoma.
- Bone marrow failure due to alcohol abuse, cancer such as Leukaemia, chemotherapy for cancer, Uraemia from renal failure.

There are two types of clotting factor deficiencies: Congenital and Acquired. Congenital disorders include Haemophilia A and B, von Willebrand's disease. Acquired clotting factor deficiencies are due to Liver disease, Vitamin K deficiency, Warfarin use, disseminated intravascular coagulation.[1]

Haemophilia A is caused due to a deficiency in clotting factor VIII. It is an inherited X-linked trait expressed in males. The clinical features include Ecchymosis, deep haematomas, delayed bleeding, spontaneous gingival bleeding and haemarthrosis.[2]Haemophilia B is the result of factor IX deficiency.

Haemophilia generally affects the males while females are carriers. Patients presenting with easy bruising, spontaneous bleeding into joints, muscles or mucous membranes and excessive bleeding following trauma or surgery should be investigated for congenital bleeding disorders. The characteristic feature of haemophilia is the increased tendency to bleed. The severity of bleeding is related to the clotting factor (Factor VIII, Factor IX or von Wille brand factor) levels in blood.

Haemophilia A and Haemophilia B are hereditary congenital bleeding disorders that have a huge impact in the modality of treatment of the patient. The dental care professional must also be aware that the patient might present with their first bleeding episode in the dental clinic without any prior indications of the bleeding disorder. A detailed knowledge of the pre-operative and post-operative management of haemophilia patients in the dental clinic, precautions to be taken and management of complications is necessary for all dental professionals. Hence the rationale of this questionnaire study was to assess the knowledge and awareness of dental students regarding dental management of haemophilia patients.

METHODS

A cross sectional study was conducted during the academic year in January 2017 among the undergraduate dental students of Saveetha Dental College, Saveetha University, Chennai. 100 students were randomly enrolled in the study including third year, final year and intern students. All students in the study voluntarily completed a questionnaire consisting of 21 closed ended questions. The questions in the questionnaire were designed to assess their knowledge, awareness and attitude regarding dental management of patients with haemophilia. Data collected, Statistical analysis done and results obtained.

Knowledge and awareness among dental undergraduate students regarding dental management of patients with haemophilia

Questionnaire:

[Kindly choose only one answer for the following questions. Answer all the questions.]

Year :
Age /Sex:

1) Haemophilia A is the deficiency of
-Factor VIII -Factor IX
-von Willebrand Factor
2) Haemophilia B is the deficiency of
–Factor VIII -Factor IX -von Willebrand factor
3) Do you routinely ask patients for history of haemophilia/bleeding disorders?
- Yes -No
4) Do you ask for family history of bleeding disorders?
-Yes -No
5) Have you treated patients with haemophilia?
-Yes -No
6) Patients with haemophilia, if improperly managed can bleed to death after extraction.
-Agree -Disagree -Don't know
7) Oral manifestations of Haemophilia include all except:
-Petechiae
-Ecchymosis
-Spontaneous gingival bleeding
-ulcers
8) Clinical manifestations of haemophilia includes :
-Bleeding into joints -prolonged bleeding with minor trauma
-Severe bleeding with major trauma/surgery -all of the above
9) Do you know the Pre-operative precautions to be taken?
-Yes -No
10) Do you know the Postoperative precautions to be taken?
-Yes -No
11) Which of the following is not used to manage bleeding during a procedure in a haemophilic patient?
-Topical thrombin -Chlorhexidine mouthwash
-Tranexamic acid mouthwash -Absorbant gelatin sponge material
-Desmopressin -all of the above
12) What is the factor VIII level [present] in case of mild Haemophilia patients?
- <1% -1% - 5%
-6%-25% -None of the above
13) Which of the following drug is contraindicated in haemophilia patients?
-Paracetamol -Acetylsalicylic acid
-Amoxicillin -Metronidazole
14) Can anti-fibrinolytics be administered for patients with haemophilia?
-Yes -No
15) Systemic diseases causing coagulation defects are all except:
-Diabetes Mellitus -Alcohol abuse
-Leukaemia - Chronic obstructive pulmonary disease
16) Factor VIII replacement therapy is given:
-Preoperatively - post operatively for management of severe bleeding
-Can be given both pre operatively and post operatively
17) What type of anaesthesia is not preferred in patients with Haemophilia?
-Infiltration -Nerve block anaesthesia
-Intraligamentary-Sedation with Diazepam or Nitrous oxide-oxygen analgesia
18) The minimum Factor VIII level before dental extraction should be:
- 20% - 30%
-50% -100%
19) Desmopressin is a synthetic antidiuretic hormone that stimulates the release of Factor VIII. What is its mode of administration?
-Intravenous -Subcutaneous
-Intranasal -All of the above
20) Are you confident in treating a patient presenting with Haemophilia?
-Yes -No
21) Do you think more emphasis must be given in the dental curriculum regarding management of bleeding disorders in dental clinics?
-Agree -Disagree

RESULTS

Out of the 100 students, 29% were third year students, 40% were final year students and 31% were interns. 80% of the students had a basic knowledge of the etiology of the disease.78% of the students were aware of the clinical manifestations of haemophilia (Fig 1) and 86% of the

students knew about the drugs that are contraindicated in haemophilia patients (Fig 2). 61% and 53% of the students respectively answered that they were not aware of the pre-operative and post-operative precautions that are required to be taken (Fig 3). 61% of the students were aware that nerve block anaesthesia is contraindicated in haemophilia patients due to the high risk of haematoma formation, whereas 39% chose other options like infiltration, sedation and Intraligamentary anaesthesia (Fig 4). Only 17% of students have treated patients with haemophilia in the dental office (Fig 5). 94% of the students agreed that more emphasis should be given on the management of patients with bleeding disorders in the dental curriculum.

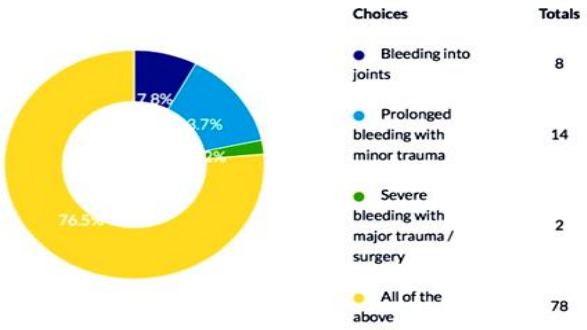

Figure 1: Clinical manifestations of Haemophilia

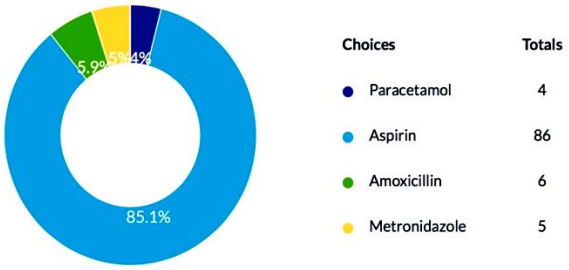

Figure 2: Drugs contraindicated in haemophilia

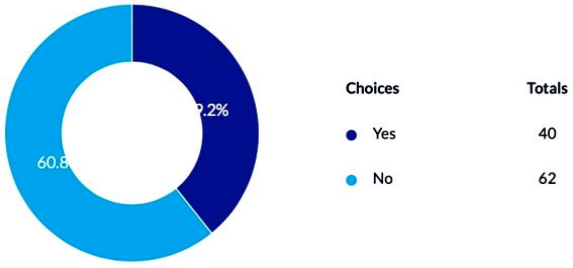

Figure 3: Knowledge on pre-operative precautions

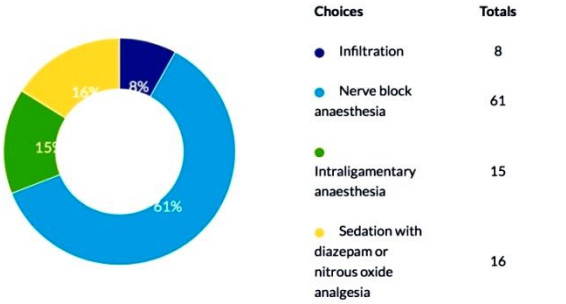

Figure 4: Type of anaesthesia contraindicated

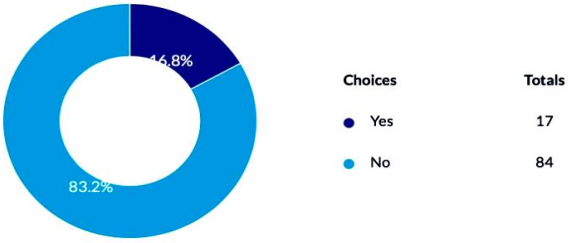

Figure 5: Students who have treated haemophilia patients

DISCUSSION

In this study most of the dental students had a good knowledge of the etiology and clinical manifestations of this condition. Depending on the nature of dental procedures carried out in these patients, the treatment strategies will vary accordingly.

Clinical Management of haemophilia includes

Haemostatic agents

1. Clotting factor concentrates- FVIII concentrates, FIX concentrates
2. Plasma products- Fresh frozen plasma, Cryoprecipitate
3. Pharmacological –Desmopressin [1-deamino-8-D-arginine vasopressin(DDVAP)], Tranexamic acid, Epsilon-aminocaproic acid

FVIII concentrates

They are used as the first line of treatment for Haemophilia A. It is available in doses ranging from 250-3000. Each unit of FVIII per kg of body weight that is infused intravenously raises the plasma FVIII level by 2 IU/dl. However the half life of FVIII is 8-12 hours.

Administering Desmopressin (DDVAP) can raise the FVIII level up to 3-6 times the baseline level and help in controlling the bleed. It has significant results in the treatment of bleeding in mild and moderate haemophilia.[3]

I. FIX concentrates

It is used to treat Haemophilia B. The half life of FIX is 18-24 hours. It is available in doses ranging from 250-2000. Each unit of FIX per kg of body weight infused intravenously raises the FIX level by 1 IU/dl.[3]

II. Fresh Frozen plasma

Fresh frozen plasma is used to treat clotting factor deficiencies since it contains all the clotting factors. 1 ml of fresh frozen plasma contains 1 unit of factor activity. The starting dose is 15-20 ml/kg.[3]

III. Cryoprecipitate

Cryoprecipitate is prepared by slow thawing of fresh frozen plasma at 4˚C for 10-24 hours. It contains significant amount of FVIII, von Willebrand factor, fibrinogen and FXIII. Intravenous infusion of

cryoprecipitate is preferred for the treatment of Haemophilia A.[3]

IV. Tranexamic acid

It is an anti fibrinolytic agent that prevents activation of plasminogen to plasmin and promotes clot stability. It is used in achieving haemostasis in case of bleeding from skin and mucosa.[4]

It is administered orally in a dose of 1g (30mg/kg) 4 times daily starting one day prior to the procedure, used as mouthwash or infused intravenously 2-3 times daily.[4,5]

V. Epsilon-amino caproic acid

It can be administered orally or intravenously 3-4 times daily up to a maximum dosage of 24g/day in adults.

Investigative procedures

Complete blood count, platelet count, Bleeding time (BT), Clotting time (CT), Activated partial thromboplastin time (APTT) [It is increased in haemophilia], Thromboplastin generation time (TGT) [It is increased in haemophilia], Prothrombin time (PT) [normal in haemophilia].

Pre surgical precautions

A detailed medical history should be recorded which includes Spontaneous bleeding, previous haemorrhagic episodes after trauma or surgery, Hereditary bleeding disorders, Vitamin K deficiency, systemic illnesses such as hepatic failure, renal failure. Medications such as anti-coagulants (heparin, aspirin, clopidogrel), NSAIDs, antibiotics should be avoided. The factor levels should be raised to appropriate levels before invasive procedures. FVIII level should be approximately 50% prior to any surgical procedure.

Post surgical management

Local haemostatic agents such as absorbent gelatine sponge material, Micro porous polysaccharide hemispheres, oxidised cellulose, Fibrin sealant, Topical thrombin, Tranexamic acid, Epsilon-aminocaproic acid used along with pre-surgical infusion of factor VIII.[2] Maintenance of proper oral hygiene is necessary to prevent dental caries, gingival and periodontal disease.

Systemic management

Factor replacement therapy (FRT) is the recent modality of treatment for Haemophilia A and B.[6]

Haemophilia A- Desmopressin (DDVAP) increases the factor VIII level in circulation by increasing the release of endogenous factor VIII in the patients. It is used in achieving haemostasis in mild forms of Haemophilia A and active bleeding.[1, 2]

Factor VIII replacement -1) Factor VIII concentrates, 2) Fresh frozen plasma, 3) Cryoprecipitate. Prophylactic factor replacement therapy is done to prevent anticipated bleeding and joint destruction in patients. It consists of intravenous administration of factor concentrates. In patients with repeated bleeding in specific regions, short term prophylaxis for 4-8 weeks is given. Prophylactic factor replacement is performed before engaging in activities with a high risk of injury.[1, 8]

Dental management

Oral surgery

Surgical procedures should be scheduled early in the day for better laboratory and blood bank support if necessary. Extraction sockets of periodontally compromised teeth have a higher tendency to bleed due to the presence of local infection. Surgical extraction through tooth sectioning helps preservation of the bone.[7] Bleeding associated with Dental extractions can be managed by placing a sponge (Surgifoam) soaked in antifibrolytic agent such as Vitamin K, tranexamic acid, Epsilon-aminocaproic acid in the socket. An absorbable gelatine sponge can also be used along with thrombin for clot stabilisation. Oxidised cellulose and fibrin glue can also be used as local haemostatic agents.[1, 8, 9]

Bleeding can be minimised by decreasing the flap size, wound closure techniques, primary closure, Removal of all tissue inflammatory granulation tissue.Nerve block anaesthesia such as inferior alveolar nerve block and lingual nerve block are contraindicated due to the higher risk of haematoma formation. They can however be used if the Factor VIII level is above 30%. Sedation with diazepam or nitrous oxide analgesia can be used to eliminate the need for anaesthesia. Non-steroidal anti-inflammatory drugs, acetylsalicylic acid (aspirin) should be avoided since they alter platelet function. Alternative drugs such as paracetamol or acetaminophen can be used for anti-analgesic and anti-inflammatory action.[1]Oral antibiotics should be administered only if it is clinically necessary.

Periodontics

Conservative flap design and minimal flap elevation are essential for effective control of bleeding tendencies. Primary closure of the flap is done with non-resorbable or resorbable sutures. Pressure applied with gauze soaked with haemostatic agent for 30 minutes reduces bleeding tendency. In case of secondary bleeding from soft tissue, electrocautery and laser can be used to control bleeding. When bleeding occurs from hard tissue, bone burnishing and application of bone wax can be done.[6, 10]

Conservative and Endodontic procedures

Endodontic treatment does not pose any risks if performed meticulously. Endodontic treatment is preferred over extraction in most cases. Pulp devitalising agents or mummifying agents such as formocresol and sodium hypochlorite are used to control bleeding. Intracanal administration of local anaesthetic with adrenaline reduces bleeding. Placement of rubber dam for isolation is crucial in avoiding iatrogenic injury to oral tissues especially from rotary instruments.[11, 12, 13]

Prosthodontic procedures

Prosthodontic treatment generally does not have a risk of bleeding. Adjustment of the prosthesis should be done in order to prevent injury to the oral tissues.

Orthodontic procedures

Orthodontic treatment generally does not require prophylactic therapy. Fixed appliances are preferred to removable appliances since the latter can injure the gingival tissue. The number of teeth to be extracted before orthodontic treatment must be minimum and extracted at the same appointment to reduce risk of prolonged bleeding episodes.[14]

In our study, the students had adequate knowledge on the oral and clinical manifestations of haemophilia, drugs that are contraindicated in haemophilia, type of anaesthesia that can be given in haemophilic patients. They were not aware of the pre-operative and post-operative precautions to be taken for haemophiliac patients during dental surgical procedures. Most ofthe students agreed that more emphasis should be given on the management of patients with bleeding disorders in the dental curriculum.They showed a positive attitude towards learning about dental management of patients with bleeding disorders.

CONCLUSION

Most of the dental students had good knowledge about haemophilia and dental management of patients with haemophilia except for few aspects in treatment. Overall, majority of the students showed positive attitudes towards learning about dental management of patients with bleeding disorders. More emphasis should be made in the dental curriculum regarding the treatment protocol for the management of bleeding episodes in the dental office, especially for the medically compromised patients and those with bleeding disorders.

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