

Post tonsillectomy haemorrhage secondary to dengue fever

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Abstract

A case of chronic tonsillitis had presented with post tonsillectomy haemorrhage secondary to dengue fever 1 week after tonsillectomy. The patient had to be taken up for surgery for removal of clot from the post operated right tonsillar fossa, following having attained haemodynamic stability.

Dengue fever in particular being a cause of post tonsillectomy secondary haemorrhage has not been reported in literature and this could be the first one to be reported.

Keywords: Post tonsillectomy haemorrhage, Dengue fever, Thrombocytopenia, Coagulopathy, Vasculopathy.

Introduction

Here we present a case of post tonsillectomy secondary haemorrhage due to dengue fever. The patient was treated for dengue shock syndrome and taken up for surgery under general anaesthesia for removal of the blood clot from the post operative site of tonsillar fossa, secondary to dengue.

This article has been done with an aim of presenting this rare case and studying dengue and its haematological abnormalities leading to bleeding manifestations in dengue.

Case Report

A 40 years old, male patient had undergone Tonsillectomy under General Anaesthesia, for Chronic Tonsillitis in a government hospital on 04/07/2017, under the cover of antibiotics. Patient was discharged after 2 days with adequate post operative medications including antibiotics, on 06/07/2017.

A week after the operation, on 11/07/2017, patient presented to us with intermittent fever since 2 days, associated with chills and rigors and generalized body ache. He complained of blood tinged saliva and pain in the operated sites of tonsillar fossae since 1 day. Other symptoms included blood in urine and bloating of abdomen, also since 1 day.

Patient was normotensive but tachycardic (115 bpm) with regular, low volume, normal character pulse. On examination of oropharynx, increasing blood clot was observed near the base of the uvula, extending towards the right tonsillar fossa.

Routine investigations showed the following: Platelet count- 46,000/uL blood, Hb-13gm/dl, Dengue NS1+ve, Dengue IgG-weak reading, Deranged Liver function test (GGT-266 IU), Urine RBC +ve, Stool occult blood +ve. Patient was admitted. Repeated blood tests showed platelet to have fallen down to as low as 25,000/uL blood. Ultrasound Abdomen and Pelvis showed splenomegaly and thickened gall bladder wall. Patient was diagnosed as a case

of Dengue Shock Syndrome with Post Tonsillectomy Haemorrhage secondary to Dengue.

Patient was started with treatment including Tranexamic acid and Vitamin K injections. At the end of transfusion of 8 units of platelets and 2 units of fresh frozen plasma, the platelets had improved to 1,41,000/uL. Hb had reduced to 11.7. Clotting parameters were normal.

Fever spikes had reduced but he had started complaining of dysphagia and mild intensity breathing difficulty. On examination, the clot in the oropharynx had increased to involve the whole of right tonsillar fossa, pushing the uvula left of midline, with fresh bleed, which the patient kept spitting out continuously. Pulse remained high (126 bpm), low volume and BP was 110/70 mmHg.

Considering the above, the patient was taken up for surgery under GA on 15/07/2017, with a written consent, thorough pre anaesthetic check-up and reserved adequate blood.

A huge clot was removed from the right tonsillar fossa. Bleeding points were identified and bipolar cauterization was done. The right tonsillar fossa was packed with gelfoam. A single suture was placed from the right anterior to posterior pillars to ensure haemostasis. Ryle's tube was inserted and patient was extubated.

Post-operatively, patient remained asymptomatic and haemodynamically stable with a platelet count of 5,00,000/uL and haemoglobin of 13gm/dl. Ryle's tube was removed and patient was kept under observation. He was discharged on 18/07/2017 and had been on regular follow up with no further complaints.

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Fig. 1: Active bleed with clot noted in the right tonsillar fossa



Fig. 2: Clot removed from the right tonsillar fossa

Discussion

1. Post tonsillectomy haemorrhage

Post-operative complications following tonsillectomy are generally rare, with haemorrhage being one of the most common and serious ones.¹

Primary haemorrhage

At the time of operation, often from paratonsillar veins.

Causes: a) poor selection of case (acute infection, bleeding disorders, hypertension, patient on NSAIDs (aspirin), anticoagulants and oral contraceptives), b) improper technique (improper plane of dissection, injury to underlying muscle or vein, presence of remnants or tags), c) failed instrumentation.²

Reactionary haemorrhage

Within a period of 24 hours, usually within 6-8 hours.

Causes: inadequate haemostasis during surgery, ligature slippage, hypotensive anaesthesia, clot in fossa, increased blood pressure during recovery, ooze from injured muscle, mismatched blood transfusion.²

Secondary haemorrhage

Usually between 5th-10th post-operative day.

Causes: sepsis, premature separation of slough or membrane, trauma from solid food ingestion, post-operative NSAIDs, idiopathic.²

Reported incidence of post-tonsillectomy bleeding varies: Primary: 0-10%, Reactionary: 0.2-2.2%, Secondary: 0.1-3.5%.¹

Carnody et al. reported that secondary haemorrhage is common in adults than children.³ Some studies have shown no statistical significance with regards to difference in patient's age.⁴

There is a discrepancy concerning sex as a risk factor. Some authors find a positive correlation for male patients being at higher risk,¹ while some show equal incidence of secondary haemorrhage in males and females.⁵

The use of bipolar cautery was found to cause haemorrhage (85%) more than cold dissection technique (6%).⁶ Post adeno-tonsillectomy haemorrhage (80%) has been more common than post tonsillectomy haemorrhage (20%).⁴ The most common cause identified for post-tonsillectomy haemorrhage was tonsillar bed infection (85%).⁴

Post-operative secondary haemorrhage was more common on day 6 (30%) followed by day 7 (15%) bleed. 10% showed post-operative bleed on days 3, 8 and 11 each.⁴ Grading of severity of post-tonsillectomy haemorrhage:⁷

1. Grade A: Anamnestically recorded blood tinged sputum.
 - a. Grade A1: Dry wound, No coagulum.
 - b. Grade A2: Coagulum, Dry wound after removal.
2. Grade B: Active bleeding, Medical treatment necessary, Dry wound afterwards, Normal range blood count, No shock.
3. Grade C: Severe bleeding, Requires surgical treatment under GA, Normal range blood count, No shock.
4. Grade D: Dramatic haemorrhage, Hb decreased, Blood transfusion required, Difficult surgical treatment, May require intensive care.
5. Grade E: Exitus due to haemorrhage or haemorrhage related complications.

Grade B bleed (85%) is more common, followed by Grade D (10%) and Grade A (5%). 90% of cases can be treated conservatively while only 10% require ligation under GA.⁴

2. Dengue fever

Dengue is an infectious disease caused by dengue viruses (human arboviruses, single stranded RNA flavi-viridae), of 4 serotypes- DENV-1, DENV-2, DENV-3, DENV-4; transmitted by *Aedes Aegypti* mosquitoes.⁸ They encode 3 structural proteins (C, prM/M and E) and 7 non-structural proteins (NS1, NS2A, NS2B, NS3, NS4A, NS4B and NS5).^{9,10} Serum levels of secreted NS1 (sNS1) positively correlate with viral titres.

The Special Programme for Research and Training in Tropical Diseases World Health Organization (TDR/WHO) proposed a classification, based on the clinical criteria, for severity of dengue, and to facilitate management of cases.

1. Dengue without warning signs
2. Dengue with warning signs
3. Severe Dengue^{11,12}

Initial symptoms in all patients, typically starts with sudden high grade fever. This acute febrile phase usually lasts 2-7 days, with facial flushing, skin erythema, myalgia,

arthralgia, headache, anorexia, nausea and vomiting. Mild haemorrhagic manifestations like petechiae and mucosal membrane bleeding may be present.¹²

Warning signs: clinical fluid accumulation due to plasma leakage causing respiratory distress, mucosal bleed, severe massive haemorrhage, restlessness, severe organ impairment (hepatic, renal, cardiomyopathy, encephalopathy, encephalitis), abdominal pain or tenderness, persistent vomiting, liver enlargement >2cm, increased haematocrit, rapidly decreasing platelet counts. The presence of weak, rapid pulse or profound shock with undetectable pulse are characterized as Dengue Shock Syndrome.¹²

Thrombocytopenia, coagulopathy and vasculopathy are the haematological abnormalities related to platelet and endothelial dysfunction, causing the bleeding manifestations, in severe dengue.¹³

Thrombocytopenia and bleeding in dengue

Thrombocytopenia is a potential indicator of clinical severity of dengue. In the 2009 WHO guidelines, the definitions describe a rapid decline in platelet count or a platelet count less than 1,50,000/uL blood.¹¹ A kinetic description of platelet count in DHF/DF showed a significant decrease on the 4th day of illness. In adults, a platelet count of 50,000/uL blood and packed cell volume >50 are significantly associated with bleeding manifestations.¹⁴

Most clinical guidelines recommend platelet transfusion in patients developing serious haemorrhagic manifestations or having platelet counts below 10-20,000 without haemorrhage or 50,000 with haemorrhage.¹⁵

Platelets, being cellular effectors of primary haemostasis, contribute to thrombus formation at sites of vascular injury.¹⁶ Mechanisms involved in thrombocytopenia and bleeding in dengue are not fully understood. Some reasons include:

1. Bone marrow suppression due to
 - a. Direct or indirect lesion of progenitor cells by DENV, reducing the proliferative capacity of haematopoietic cells.^{17,18}
 - b. Infected stromal cells
 - c. Changes in marrow regulation, causing bone marrow hypoplasia, attenuating megakaryocyte maturation.^{19,20,21}
2. Platelet consumption during ongoing coagulopathy process due to
 - a. disseminated intravascular coagulation (DIC) and
 - b. increased apoptosis and
 - c. involvement of IgM antiplatelet antibodies.²²⁻²⁴
3. Activation of complement system²⁵
4. Increased peripheral sequestration^{26,27}

Other factors determining the severity of bleeding in dengue includes: reduced circulating levels of natural anticoagulants protein C, protein S and antithrombin and higher plasminogen activator inhibitor-1 (PAI-1).²⁸

Conclusion

Post tonsillectomy haemorrhage secondary to dengue fever could be of rare incidence and fatal. Hence, knowing the immunopathogenesis of dengue and its role in causing haemorrhage in post tonsillectomy is of utmost importance.

Here, our patient had presented with dengue fever after 1 week of tonsillectomy. He had developed a Grade C haemorrhage presenting with a huge clot arising from the right post tonsillectomy fossa for which surgical intervention was required. As explained, it could have occurred due to the haematological abnormalities related to platelet and endothelial dysfunction due to the dengue virus.

Summary

1. A 40 years old male patient had undergone tonsillectomy for Chronic tonsillitis and a week after which, had presented to us with symptoms of Dengue Shock Syndrome with post tonsillectomy haemorrhage from the right tonsillar fossa, secondary to dengue fever.
2. The patient was admitted and treated adequately for dengue and for bleeding per mouth. He was transfused with adequate platelets and fresh frozen plasma after which he was taken up for surgery – clot removal from the post operative right tonsillar fossa, under General Anaesthesia. Following the procedure, the patient was kept under observation and discharged once stabilized and cured.
3. Post tonsillectomy haemorrhage secondary to dengue has not been reported in literature and this could be the first one to be reported. It is of rare incidence but could be fatal if treatment is delayed.
4. The bleeding manifestations in dengue could be due to the various mechanisms in dengue fever causing various haematological abnormalities, mainly thrombocytopenia, vasculopathy and coagulopathy. These can be explained by the dengue viruses (DENV) affecting the function and count of platelet directly and indirectly by affecting the function of bone marrow cells, by leading to the formation of auto antibodies and by activating complement system and by many other mechanisms which are further being studied.

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Conflict of Interest

None.

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