Interesting Case of Stroke

Sreenivasa Rao Sudulagunta1, Mahesh Babu Sodalagunta2, Mona Sepehrar3, Hadi Khorram4, Zahra Noroozpour5

Abstract
We report regarding a 46 year old female patient, who presented with complaints of severe headache and right sided weakness. Examination revealed right Hemiplegia with BP of 144/90 mm Hg. Investigations revealed Creatine Kinase: 470IU/L, normal Blood counts, ESR and CRP. Thyroid profile was normal. Fibrinogen levels were 17.9mg/dl and repeat test after 1 week showed 24.6mg/dl. ECG showed incomplete left bundle branch block. Echocardiography was normal. Patients admitted with stroke should be evaluated for fibrinogen deficiency and more emphasis to be laid in case of intracranial hemorrhage and previous history of bleeding.

Introduction
Factor I deficiency is a rare inherited bleeding disorder related to fibrinogen function in the coagulation cascade. It is classified into three distinct disorders: afibrinogenemia, hypofibrinogenemia and dysfibrinogenemia. Afibrinogenemia is defined as a lack of fibrinogen in the blood with <20 mg/deciliter of plasma with estimated frequency between 0.5 and 2 per million. Hypofibrinogenemia is defined as a partial deficiency of fibrinogen, clinically 20–80 mg/deciliter of plasma. Estimated frequency varies from <0.5 to 3 per million.

Among all the reported cases of fibrinogen disorders in registry, afibrinogenemia accounted for 24% of cases, hypofibrinogenemia accounted for 38%, and dysfibrinogenemia accounted for 38%. These disorders follow autosomal recessive inheritance affecting both males and females. Dysfibrinogenemia and thrombosis may be overrepresented in women due to risk of thrombosis associated with pregnancy and the postpartum period.

Case Report
A 46 year-old woman was bought to Emergency room with sudden loss of consciousness, left sided weakness of body and history of headache. As GCS was 5/15 patient was intubated and mechanically ventilated in Intensive care unit. History from husband revealed headache, epistaxis, cough with expectoration and shortness of breath from 4 days for which she was admitted in local clinic. History from relatives revealed that her father had similar bleeding episodes and death due to intracranial hemorrhage.

Patient did not have history of Comorbid conditions and history of recurrent mucosal bleeding in form of epistaxis and menorrhagia was present. Patient had history of 3 times abortion in 4th, 6th and 8th months of pregnancy. Investigations showed fibrinogen level of 17.9 mg/dl, Factor VIII 120.2%, PT > 2 minutes, APTT > 3 minutes, TT 33.8 sec. History from relatives revealed that her father had similar bleeding episodes and death due to intracranial hemorrhage.

Patient was given fibrinogen concentrate to maintain level more than 0.8g/l. Fibrinogen concentrate is available as a powder to be dissolved in 50 ml of water and be given as a slow IV injection. The advantages of fibrinogen concentrate over cryoprecipitate are that it has less viral transmission, less immunogenic, lesser thromboembolism events. Condition of patient improved over a period of 3 days with no requirement of mechanical ventilation. Patient was shifted to medical ward after a period of 7 days. Patient was advised physiotherapy and monitoring of fibrinogen levels.

Discussion
Fibrinogen is a 340-kD glycoprotein that is synthesized in the liver and circulates in plasma at a concentration of 2-4 g/L, with a half-life of 4 days. A hexamer, consisting of 3 paired white blood cell count of 12,100 /mm³ (Neutrophils 24%, Lymphocytes 70%, Eosinophils 3%, monocytes 3%) ESR 52mm/hr), Hemoglobin of 10mg/dl and platelet count was 179,000. The arterial blood gases had pH of 7.38, a PO2 of 65 mmHg, PCO2 of 35.5mmHg and 17.9 mmol/l of bicarbonate. Renal function test was normal with Creatinine of 1.4mg/dl and Blood urea of 30mg/dl. Liver function test was normal. Echocardiography was normal.

Fig. 1: Intracranial hemorrhage in the left cerebral hemisphere extending into ventricles
polypeptide chains: A-α, B-β, and γ; A
and B refer to specific polypeptides on
2 of the chains. Synthesis of the protein
in hepatocytes is under the control of
3 genes FGA, FGB, FGG located within
50 kilobases (kb) on chromosome 4.
It maintains haemostatic balance as
a substrate for clot formation, binds
to platelet to support aggregation,
has role in wound healing and fibrin
clot is a template for both thrombin
binding and fibrinolytic system. 7
Dose (g) = desired increment in g/L x
plasma volume (plasma volume is 0.07
x (1-hematocrit) x weight (kg). patient’s
personal and family history of bleeding
and thrombosis should be taken into
consideration for appropriate dosing
of replacement therapy.

In patients with hypofibrinogenemia,
bleeding episodes are usually mild
and may occur following trauma or
surgery. 8,9 Our patient presenting
with intracranial hemorrhage is rarely
reported. Cryoprecipitate has been
used as a source of fibrinogen; each
bag contains 100-250 mg of fibrinogen.
The guidelines for dysfibrinogenemia
are not standardized due to a lack of
sufficient data.

Conclusion
Hypofibrinogenemia is a rare
disease occurring almost 1 in 1 million.
Fibrinogen replacement therapy is
effective in preventing hemorrhage
along with continuous monitoring of
fibrinogen levels. Patients admitted
with stroke should be evaluated
for fibrinogen deficiency and more
emphasis to be laid in case of
intracranial hemorrhage and previous
history of bleeding.

Consent
Written informed consent was
obtained from the patient for
publication of this case report and
accompanying images.

References
rare coagulation disorders—review with guidelines for
management from the United Kingdom Haemophilia Centre
article/968677-overview#a0199.
4. Acharya SS, Coughlin A, Dimichele DM. Rare Bleeding
Disorder Registry: deficiencies of factors II, V, VII, X, XIII,
2:248-56.
5. Elliott BM, Aledort LM. Restoring hemostasis: fibrinogen
concentrate versus Cryoprecipitate. Expert Rev Hematol
2013; 6:277-86.
6. Collen D, Tytgat GN, Claey s H, Piessens R. Metabolism
and distribution of fibrinogen. I. Fibrinogen turnover in
physiological conditions in humans. Br J Haematol 1972;
7. Caroline Berube. Disorders of fibrinogen. Up to date Apr
2014.
8. Peyvandi F, Haertel S, Knud s S, Mannucci PM. Incidence
of bleeding symptoms in 100 patients with inherited
afibrinogenemia or hypofibrinogenemia. J Thromb Haemost
2006; 4:1634-7.
9. Acharya SS, Dimichele DM. Rare inherited disorders of