Case Report

A rare case of thrombotic thrombocytopenic purpura (TTP) presented with cerebral venus sinus thrombosis

Fawaz Mohammed Alhemaid, Motaz Gafer Helali, Noha Sulieman

Neuroscience Department, King Fahd Armed Forces Hospital, Jeddah, Saudi Arabia.
Correspondence to: Motaz Gafer Helali, E-mail: mgmhelali@hotmail.com

Received August 6, 2016. Accepted August 17, 2016

Abstract

Thrombotic thrombocytopenic purpura (TTP) is a rare blood disorder characterized by thrombotic microangiopathy caused by reduced activity of the Von Willebrand factor-cleaving protease ADAMTS13. A rare case of TTP associated with cerebral venus sinus thrombosis has been reported. A 36-year-old male, who has diabetes and had recent left middle cerebral artery (MCA) infarction, presented to the emergency room with recurrent generalize tonic clonic seizer. Investigations revealed evidence of thrombocytopenia, microangiopathic hemolytic anemia and acute kidney injury. MRV brain showed cerebral venus sinus thrombosis. The association of TTP with cerebral venus sinus thrombosis is extremely rare and worth further studies.

KEYWORDS: Thrombotic thrombocytopenic purpura, generalized tonic clonic seizer, cerebral venus sinus thrombosis

Introduction

Thrombotic thrombocytopenic purpura (TTP) is a rare hematological disorder that approved fatal in most cases if not treated properly. It is more common in adults unlike the closely related disorder, hemolytic uremic syndrome, which is more common in children. Both are characterized by thrombocytopenia and microangiopathic hemolytic anemia. Neurologic abnormalities are characteristic for TTP. In the past, before the availability of plasmapheresis as an effective therapy for TTP, the diagnosis was based on the presence of pentad of microangiopathic hemolytic anemia, thrombocytopenia, neurologic andrenal abnormalities as well as fever. Because of the presence of effective treatment now, the need for early recognition has led to less strict diagnostic criteria which allow prompt initiation of therapy.[1] In a randomized clinical trail demonstrating the effectiveness of plasma exchange therapy, the presence of microangiopathichaemolytic anemia and thrombocytopenia without recognized alternative cause was sufficient for the diagnosis of TTP.[2]

Access this article online	
Website: http://www.ijmsph.com	Quick Response Code:
DOI: 10.5455/ijmsph.2017.06082016593	

TTP can be inherited or acquired. The incidence of acquired TTP is approximately three cases per one million adults per year, based on data from the Oklahoma TTP-HUS Registry.[3]

In a retrospective study, the results showed that posterior reversible encephalopathy syndrome (PRES) was the most common brain imaging abnormality in severe manifestations of TTP. Moreover, it is also found that large infarctions and hemorrhage were infrequent. Hence, abnormal brain neuroimaging does not seem to affect patient outcome, and full neurologic recovery is still possible even in comatose patients with extensive brain abnormalities on MRI.[4]

Case Report

A case of 36-year-old male with known case of DM, HTN and recent ischemic stroke presented to the emergency department with subjective fever at home, vomiting, and recurrent generalize seizer for one day. The patient is also a smoker for several years. The patient has no past history of seizer or family history of epilepsy and was noncompliant with his medications. The patient was admitted in another hospital one month ago and diagnosed as having left middle cerebral artery (MCA) infarction. On examination, patient was awake T = 37.8° C, BP=145/90. The patient had global aphasia andresidual right side hemiplegia. Other systems examinations were unremarkable and no evidence of skin rash. Investigations revealed the following ECG: sinus bradycardia with prolonged QT interval. Blood test: platelet = 19 10^9 (was 225 one month ago) Hb =12.4 g/dl, Hct = 36.7, WBC =

13.2, urea = 19.1 mmol/L, Creatinine = 164 umol/L (was normal one month ago), CRP=61.9, blood picture showed schistocytes = 2 + RBG = 18 mmol/L, reticulocytes = 1.4 %, D-dimer = 19.7 mg/L FEU, total bilirubin = 36.1 umol/L, INR = 1, ALT = 32 U/L, conjugated bilirubin = 11.06 umol/L, lactic acid dehydrogenase = 2495 U/L, urine nitrate=positive, urine WBC 12–45 cells, urine RBC more than 56 cells, urine culture = normal flora, blood culture = no growth, HIV test negative.

ECHO: EF 55% with impaired LV relaxation no LV clot and no valvularlesion.

MRI and MRV brain with gadolinium shows left frontoparietal and occipital abnormal signal alteration involving cortical and subcortical area suggestive of left middle cerebral artery MCA infarction (Figure 1). MRA shows left MCA occlusion (Figure 2). MRV shows non opacification of the left transverse sinus with contrast due to underline deep venous sinus thrombosis (Figure 3).

EEG: showed diffuse slowing, however no definite epileptic activity made out (Figure 4).

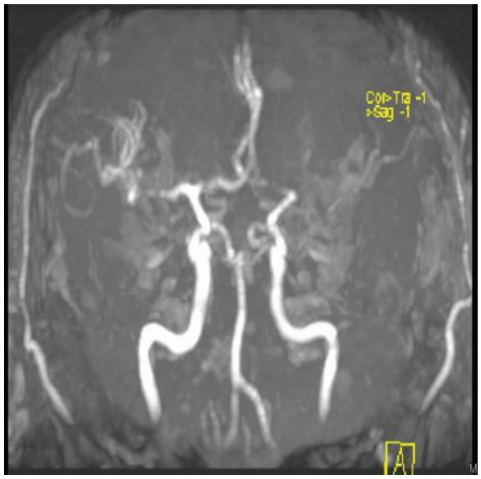

Figure 2: MRA brain with contrast shows occluded left middle cerebral artery (MCA)

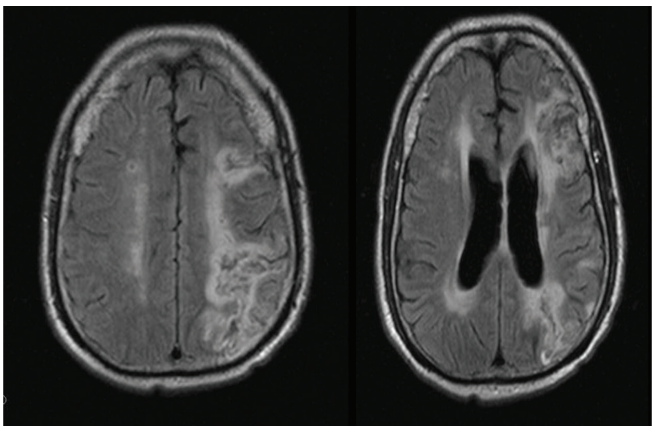

Figure 1: MRI Brain T2 FLAIR sequence shows left frontoparietal and occipital abnormal signal alteration involving cortical and subcortical area. Consistent with left MCA infarction

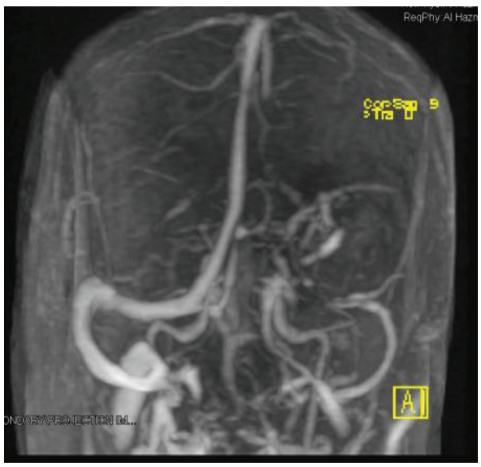

Figure 3: MRV brain with contrast shows non opacification of the left transverse sinus due to underline deep venous sinus thrombosis

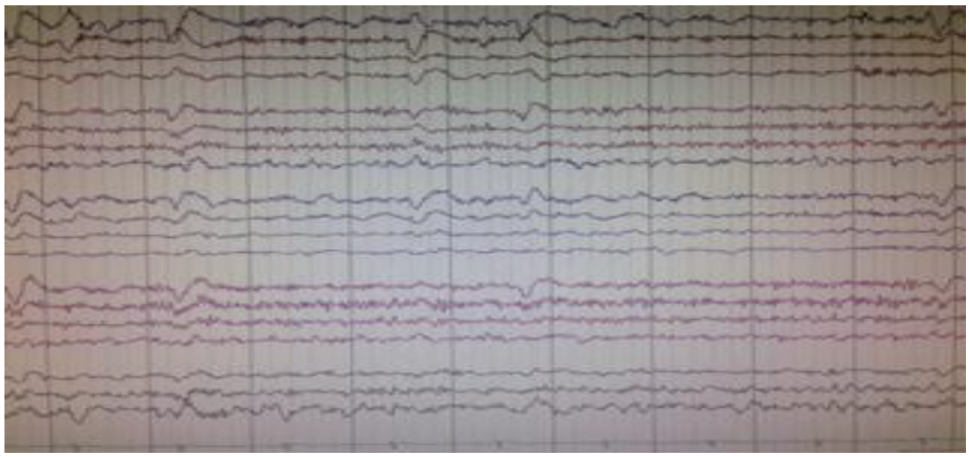

Figure 4: EEG showed diffuse slowing however no definite epileptic activity

Patient received antiepileptic medication (NaValporate and levatiracetam) then received plasmapharesis together with pulse steroid therapy followed by rituximab as he developed recurrent relapses. Thereafter, patient regained a normal renal function and peletelet count. Then the patient received anticoagulation therapy for his venous sinus thrombosis. Patient was followed by neurology, hematology as well as nephrology teams.

Discussion

The association of TTP and venus sinus thrombosis represents the unique feature of this case and considered one of the rare atypical presentations of TTP. Atypical presentations of TTP were reported.[5] As an example, there have been several reports of patients presenting with neurologic symptoms without evidence of microangiopathic hemolytic anemia (MAHA) and thrombocytopenia who subsequently (within days to weeks) developed typical clinical features of TTP. Therefore, it is possible for neurologic abnormalities to precede hematologic abnormalities. It is assumed that these patients may have specific susceptibility for neurologic abnormalities. It is still unclear whether the initial left MCA ischemic stroke that happened for this patient one month prior to patient's microangiopathichemolytic anemia is directly related to TTP or not.

Furthermore, patients who have recovered from TTP may have persistent cognitive abnormalities. They often complain of problems of memory, complex attention, and concentration skills as well as rapid language generation. The abnormalities observed in these patients are characteristics of disorders associated with diffuse sub cortical micro vascular disease.[6]

A rare case of superior sagittal sinus thrombosis has been reported in association with Evans syndrome of hemolytic anemia,[7] but as far as we know the association of cerebral vein thrombosis with TTP is extremely rare.

Conclusion

This is a case of thrombotic thrombocytopenic purpura presented with cerebral venus thrombosis complicated with recurrent generalized seizer. Further studies will be required to define the risk for neurological injury in patient who diagnosed with TTP.

References

1. George JN. Thrombotic thrombocytopenic purpura. N Engl J Med 2006 May4;354 (18):1927–35.
2. Rock GA, Shumak KH, Buskard NA et al. Comparison of plasma exchange with plasma infusion in the treatment of thrompotic thrombocytopenic purpura. N Engl J Med 1991:325:393–7.
3. Reese JA, Muthurajah DS, Kremer Hovinga JA, et al. Children and adults with thrombotic thrombocytopenic purpura associated with severe, acquired Adamts13 deficiency: comparison of incidence, demographic and clinical features. Pediatr Blood Cancer 2013; 60:1676.
4. Burrus TM, Wijdicks EF, Rabinstein AA. Brain lesions are most often reversible in acute thrombotic thrombocytopenic purpura. Neurology 2009; 73:66.
5. Sarode R. Atypical presentations of thrombotic thrombocytopenic purpura: Rev J Clini Apheresis 2009 Jan 1;24(1):47–52.
6. Kennedy AS, Lewis QF, Scott JG, Kremer Hovinga JA, Lämmle B, Terrell DR, Vesely SK, George JN. Cognitive deficits after recovery from thrombotic thrombocytopenic purpura. Transfusion 2009 Jun 1;49(6):1092–101.
7. Shiozawa Z, Ueda R, Mano T, Tsugane R, Kageyama N. Superior sagittal sinus thrombosis associated with Evans' syndrome of haemolyticanaemia. J Neurol October 1985;232(5):280–2.

How to cite this article: Alhemaid FM, Helali MG, Sulieman N. A rare case of thrombotic thrombocytopenic purpura (TTP) presented with cerebral venus sinus thrombosis. Int J Med Sci Public Health 2017;6:223-225

Source of Support: Nil, **Conflict of Interest:** None declared.