

A Rare Case of Thrombotic Thrombocytopenic Purpura in a Child

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Abstract

An eight year old boy, presented with renal disease and renal failure. Clinical history and histopathology point to a diagnosis of thrombotic thrombocytopenic purpura. The renal glomeruli and the brain capillaries showed bulky thrombi attached to the vessel wall. At places aneurysmal dilatation of the vessel wall seen. This rare disease, has better prognosis nowadays with advances in treatment.

Introduction

Thrombotic thrombocytopenic purpura is a fulminant condition, that occurs due to endothelial injury with release of procoagulant material from the endothelial cells. Causes include pregnancy, drugs, infection and cancer. Characteristic findings include hyaline fibrin thrombi in the microvasculature, thrombocytopenia, microangiopathic haemolytic anaemia, fever, renal failure, and focal neurologic deficits. The presence of hyaline thrombi in arterioles, capillaries and venules without any inflammatory changes in the vessel wall is diagnostic. With improved therapy most patients surviving the acute illness recover completely, with no residual renal or neurologic disease. A fatal case of TTP in an eight year old child, with autopsy findings is discussed here.

Case Report

An eight year old male child, presented with high grade fever, puffiness of face, oedema feet, oliguria, jaundice and melaena. Investigations revealed the following:

BUN 98 mg%; Serum Creatinine 6.5 mg% HB 5

gm%; PCV 20%; MCHC 25%; TLC 4,700/cumm; Platelets 25,000/ cumm; RBC morphology – microcytosis, hypochromasia, polychromasia, poikilocytosis. Retic 13%; DCT – Negative; LE Cell – Negative.

Urine – Albumin++; RBC 6-7/hpf; Pus cells 4-5/hpf; granular casts+.

Child was taken up for dialysis. He later became irritable with irrelevant talk.

Based on history and investigations the clinical impressions were:

Nephrotic syndrome

Acute nephritis with anaemia

Hepatitis with nephritis

Thrombotic thrombocytopenic purpura with nephritis

SLE nephropathy

The child deteriorated and died. An autopsy was performed. The positive findings were enlarged kidneys with multiple petechial haemorrhages. The brain showed intracerebral haemorrhages. Histopathology of organs showed lesions in the kidney and brain. Multiple bulky thrombi were present in the kidney in the small sized vessels as well as the glomerular capillaries (Fig. 1). No inflammatory cells were seen in the vessel wall. No features of lupus nephropathy were seen. The brain showed capillaries with thrombi and surrounding haemorrhages (Fig. 2). Small areas of infarction were seen. The thrombi in both organs were bulky and adherent to the vessel wall. At places aneurysmal dilatation of the involved vessel walls was seen. Thrombi stained positive with PTAH indicating the presence of fibrin. A final

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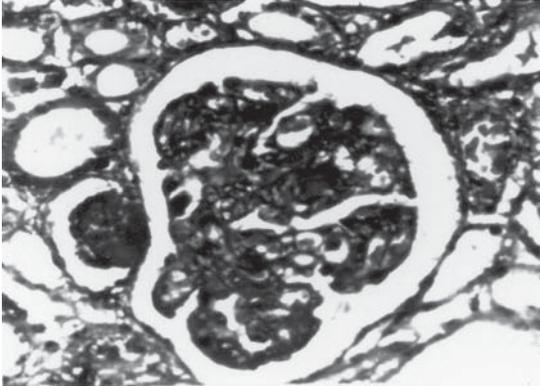


Fig. 1 : Thrombi seen in the capillary loops of the glomerulus. Aneurysmal dilatation of the afferent arteriole seen. No inflammation seen in the vessel walls.

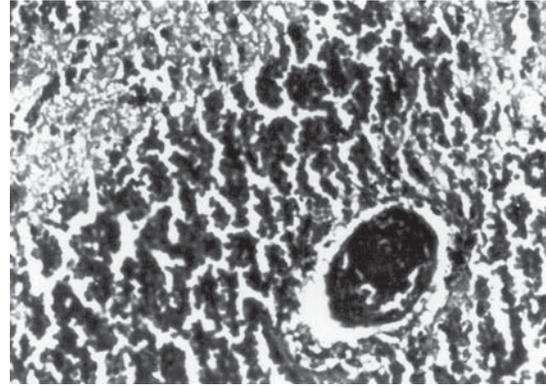


Fig. 2 : Microthrombus seen in the capillary of the brain with haemorrhage in the surrounding brain parenchyma.

diagnosis of thrombotic thrombocytopenic purpura was made.

Discussion

An eight year old boy came with signs and symptoms of renal disease and renal failure. The clinical picture, investigations, autopsy findings and histopathology point to a likely diagnosis of TTP.

This unusual disease was first described by Moschowitz in 1925,¹ and is characterized by fever, purpura, haemolytic anaemia, renal disease and neurologic disturbances.³ This child had these features.

It is more common in female (F:M = 2:1),¹ and in the 10-40 years age group. The case presented here is an eight yr. male child.

The basic lesion involving the vessels in the different organs, are the presence of bulky granular thrombi adherent to the vessel wall. Often the involved vessels show aneurysmal dilatation,⁴ as also seen in this case. Studies show these thrombi to be composed of platelets and thrombi. TTP is primarily a vascular disease, with endothelial damage, with secondary coagulation in damaged vessels. As a result of endothelial damage vWF and other procoagulant material is

released into the circulation.³ Endothelial damage also results in a localized defect in fibrinolysis. Vessels containing microthrombi lack fibrinolytic activity. This causes aggregation of platelets and predisposes to microvascular thrombosis, which results in a microangiopathic form of haemolytic anaemia and organ dysfunction² as seen in this case.

The haemolytic anaemia is only a minor part of the major clinical problem and does not have the morphologic changes encountered in the more chronic haemolytic diseases. The haemolytic anaemia is responsible for jaundice in this case.

Although there are some similarities to DIC, the two entities are distinct and separate. Unlike in DIC, the activation of the clotting system is not of primary importance. A similar clinical and pathologic picture as TTP occurs in HUS. But in contrast to TTP, HUS remains localized to the kidney (although there are differing views on this) and occurs in the younger age group. Neurologic features other than those associated with uraemia are uncommon in HUS.³ However there is a less clear distinction between HUS and TTP that is generally claimed. Hence some workers consider it as different clinical expressions of

the same disease and choose to call this disease HUS/TTP.⁴

With new advances in treatment, this condition is not as fatal as before.

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RISK OF VIROLOGICAL FAILURE IN PATIENTS WITH HIV

'This study underscores the need for access to alternative, less toxic, and more affordable first-line, second-line, and now third-line antiretroviral drugs in developing countries'

The long-term durability of the antiviral efficacy provided by the three original classes of antiretroviral drugs-nucleoside reverse transcriptase inhibitors, non-nucleoside reverse transcriptase inhibitors, and protease inhibitors - is not well understood, yet it is crucial for planning future needs for drugs and health-care resources. Andrew Philips and colleagues did a long-term observational cohort study to estimate the proportion of patients who had extensive triple-class virological failure. They showed that patients starting antiretroviral therapy have a slow rate of failure, which has decreased as drugs and experience with their use have improved. Since developing countries will most probably have to rely on the three antiretroviral drug classes for the imminent future, it is especially encouraging that these drugs can sustain virological efficacy for a substantial length of time. In a Comment, Edward Mills and Jean Nachega examine the implications of this study for the treatment of patients in developing settings and discuss the questions that need to be addressed through future research.

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