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Case Report

Acute Gastroenteritis Triggered Immune Thrombocytopenic Purpura Complicating Intracranial Haemorrhage in Paediatric-A Case Report

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ABSTRACT

Immune Thrombocytopenia (ITP) is an autoimmune disorder that can lead to several bleeding complications. Intracranial Haemorrhage (ICH) is a very serious life-threatening condition. We present a case of ICH due to ITP flare-up triggered by Acute Gastroenteritis (AGE). A three-year-old female was admitted with complaints of weakness of left upper and lower limb, deviation of mouth to right, intermittent vomiting and headache since the past three days and viral AGE 10 days back. The patient had decreased platelet levels and intracranial haemorrhage thereby inducing seizures. The patient showed an excellent response to corticosteroids and IV Immunoglobulin (IV IG). The corticosteroid dose was slowly tapered after gradual improvement. The presence of acute viral gastroenteritis a few days back triggered the flare-up of ITP and subsequently led to ICH. Identification of potential risk, timely diagnosis and appropriate management strategies can reverse intracranial haemorrhage and prevent any serious complications of ICH in children.

Keywords: Acute Gastroenteritis, Immune Thrombocytopenia, Intracranial Haemorrrhage.

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INTRODUCTION

The development of platelet autoantibodies and the subsequent destruction of platelets have long been believed to be the mechanism of immune or Idiopathic Thrombocytopenic Purpura (ITP).[1] ITP is a syndrome characterized by persistent thrombocytopenia (platelet count 150,000/microliter) caused by a circulation anti-platelet factor that results in platelet destruction by the reticuloendothelial cell system.[2] Immune thrombocytopenia, decreased bone marrow output, and increased splenic sequestration are the main causes of rapid platelet consumption. Clinical manifestations might be abrupt with significant bleeding or sneaky with delayed progression and few or no symptoms.[3] ITP is reported to affect 6.4 out of every 100,000 children and 3.3 out of every 100,000 adults annually, according to a population-based study.[4] The most harmful side effect of ITP in Children is Intracranial Hemorrhage (ICH). Less than 1 in 100 children with ITP experience ICH, and prevention of ICH is the main goal of ITP treatment.[5]

Along with severe thrombocytopenia, the characteristics that make individuals more likely to develop ICH are still poorly understood. Platelet counts below 100,000 to 200,000/microliter, medications such as Nonsteroidal Anti-Inflammatory Medicines (NSAIDs), Histamine2 (H2) blockers (Ranitidine), head trauma, viral infections, vasculitis related to Systemic Lupus Erythematosus (SLE), and cerebral Arteriovenous Malformations (AVMs) are examples of potential risk factors. ITP is classified as acute, persistent, or chronic if it lasts less than three months, between three and twelve months, or longer.[6] The majority of children who develop it recover their platelets completely, and it is a self-limiting disorder. However, the chronic form of the illness strikes 20% to 30% of children.[7] ITP is a typical autoimmune disease symptom in children. The incidence of life-threatening hemorrhage is uncommon (0.2–0.9%) but can be fatal when it manifests in essential organs, even though patients frequently come with bruises, petechiae, and occasional mucosal bleeding.[8] Here we report a case of acute ITP complicating ICH secondary to Acute Gastroenteritis (AGE) in a pediatric patient. Risk factors that predispose to the development of ICH in ITP are discussed.

CASE DESCRIPTION

A three-year-old female child was brought to the emergency department with complaints of weakness in her left upper and lower limbs, as well as a deviation of her mouth to the right. She was diagnosed with AGE 10 days ago, and after receiving treatment with ondansetron 4 mg OD for two days, paracetamol syrup 3 mL Si Opus Sit (SOS), and ranitidine 3 mL (twice daily)

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BD for three days, she was discharged. She returned three days after being discharged, complaining of five episodes of vomiting and very severe abdominal pain.

Investigation

In response to the five episodes of vomiting, a complete blood count, electrolytes, and urine analysis were done. A Complete Blood Count (CBC) revealed platelet levels of 31,000/microliter. Urine analysis and serum electrolytes were normal.

Differential diagnosis

The differential diagnosis of thrombotic thrombocytopenic purpura, hemolytic uremic syndrome, disseminated intravascular coagulation, paroxysmal nocturnal hemoglobinuria, myelodysplastic syndrome, lymphoproliferative disorders, infection (HIV, Hepatitis C), and drug-induced thrombocytopenia (alcohol, heparin, sulfonamides) was excluded since the patient had isolated thrombocytopenia with normal hemoglobin and leucocyte counts and was HIV and Hepatitis C negative. The diagnosis of immune thrombocytopenia was confirmed with no bleeding episodes.

On the next day, the patient developed weakness of the left upper and lower limb, deviation of the angle of the mouth to the right side, followed by focal seizures for two minutes, and weakness with no difficulties in speech, fever, vomiting, abdominal pain, or loose stools. A Computed Tomography (CT) scan revealed multiple foci of parenchymal hemorrhage in the right frontal lobe (shown in Figure 1), left parietal lobe (shown in Figure 2), and anterior interhemispheric fissure with perilesional edema.

A diagnosis of ITP with ICH and left hemiplegia was made.

Treatment

Fosphenytoin injection (37.5 mg) was started for focal seizures. Intravenous Immunoglobulin (IVIG) was started and was transfused at the following rate (as shown in Table 1):

Methylprednisolone, 30 mg/kg, was infused over four hours in 100 mL of Dextrose-Normal Saline (DNS). DNS infusion was initiated at a rate of 20 mL/hr and later tapered to 10 mL/hr.

The next day, platelet counts increased to 52,000/microliter. Inj. Fosphenytoin 37.5 mg BD was continued and converted to syrup phenytoin (25 mg/mL) on day four. 30 mg/kg OD methylprednisolone was injected, which was converted into the syrup Prednisolone (5 mg/mL) in 10 mL or 0 mL.

On day five, the patient was stable and alert with a platelet count of 61,000/microliter and was discharged with Syrup Prednisolone 5 mg/5 mL: 10 mL+0 mL+5 mL for 1 week after food; Tablet Lansoprazole 15 mg: 1-0-0 for one week one hour before breakfast; and Phenytoin suspension 25 mg/mL: 1 mL + 0 mL + 1 mL for two weeks before food.

Follow-up and outcome

On follow-up after one week, the platelet counts had improved to 85,000 per microliter, and the patient was alert and active with no bleeding episodes. The frequency of seizure was limited during the initial treatment and finally there was no seizure happened.

The prednisolone dose was tapered slowly and stopped after one month, and the platelet count improved to 144,000 platelets per microliter.

DISCUSSION

ITP is a bleeding disorder without signs of leucopenia or anemia, with a platelet count of less than 100,000/microliter.[9] The exact process causing ITP to develop in children is uncertain. According to studies, thrombopoietin's inability to compensate for the peripheral destruction of the platelets and the production of autoantibodies against the platelet glycoproteins are the causes of a lower platelet count. After an infection or immunization, the onset of childhood ITP is most intense and self-limiting. The majority of individuals experience hemorrhages, which typically present as menorrhagia, hematuria, or gastrointestinal bleeding. The most fatal ITP consequence, intracranial bleeding, can happen in 1-2 percent of patients. Intracranial bleeding can develop from severe thrombocytopenia with a platelet count of fewer than 100,000/microliter or less. Treatment is mandatory when there is life-threatening bleeding such as ICH, and children carry severe bleeding risks too. ITP mortality is said to occur in about 25% of cases. In a small number of instances, the causes of ITP were not determined, although there are a few potential

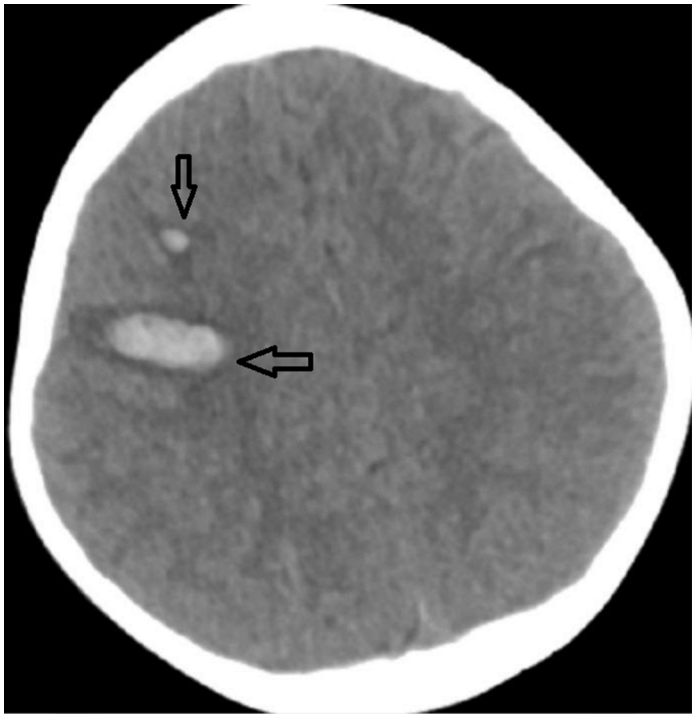

Figure 1: CT impression of the patient showing multiple foci of parenchymal hemorrhage in the right frontal lobe.

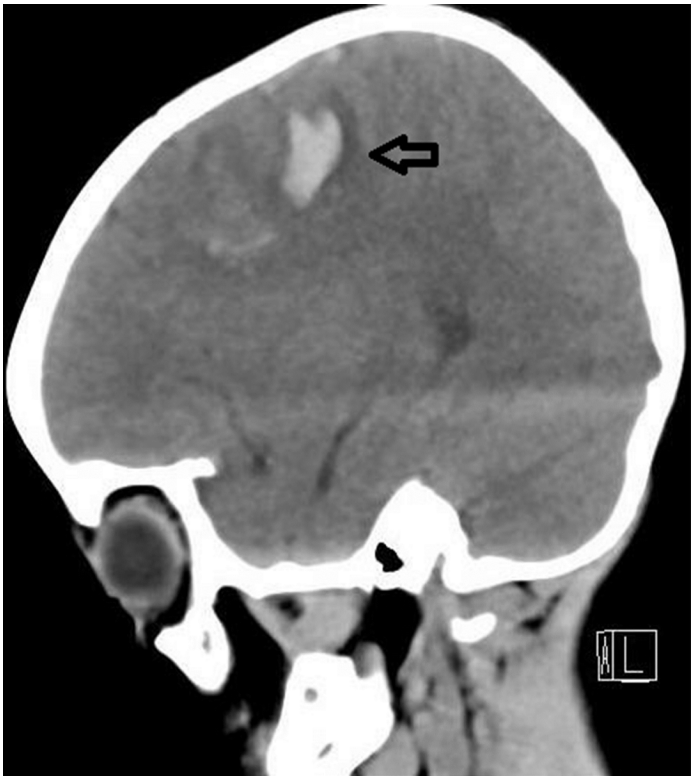

Figure 2: CT impression of the patient showing multiple foci of parenchymal hemorrhage in the left parietal lobe.

Table 1: IV/IG transfusion rate.

IV IG	Transfusion rate
first 15 min of the transfusion	5mL/hr (0.5mL/kg/hr)
second 15-min transfusion	10mL/hr (1mL/kg/hr)
third 15-min transfusion	20mL/hr (2mL/kg/hr)
transfusion for the fourth and final 15 min	30mL/hr (3mL/kg/hr)

causes, including head trauma, severe thrombocytopenia, overuse of NSAIDs, infections, and arteriovenous malformation. The rate of fatalities increased as the causes of ITP became obscure.[5,10-20] According to a literature review between 1954 and 1998, which included 75 cases, 54% of ICH deaths were attributable to head trauma, aspirin use, and artero-ophthalmic malformations.[20] The most frequent factor that can cause ITP is head trauma.[5,15,19,20]

On evaluating the risk factors for this patient, the AGE infection ten days ago and its treatment with Ranitidine would have led to the development of severe ITP complicating ICH, and other risk factors are absent.

Ranitidine is used for the treatment of AGE and can cause thrombocytopenia through an idiosyncratic reaction. The WHO-UMC scale showed a possible causality with ranitidine in this case.

According to the results of the literature analysis, 92% of patients between the ages of 6 months and 20 years had an ICH diagnosis. 72% of these patients experienced ICH before receiving an ITP diagnosis within six months. 10% of these were found to have ICH three days before the ITP diagnosis. According to the findings, 3% of patients developed ITP and ICH at the same time.[20]

Worldwide, three to five billion cases of acute gastroenteritis occur each year in children under the age of five. Being such a common illness, the chance for AGE to develop into a serious condition like intracranial hemorrhage is not always expected.

The present case had AGE that triggered ITP, which could have been further exacerbated by the presence of the drug Ranitidine.

CONCLUSION

The incidence of ITP in children is lower than in adults and is often self-limiting. ICH is roughly estimated in 1 in 750 children with ITP and is the most serious and life-threatening complication of ITP.

Any infection or vaccination can trigger ITP in children. Being more prone to a lot of infections, treating physicians should be aware that any child with any infection is at risk of developing ITP so that serious complications of ITP can be prevented.

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CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

ABBREVIATIONS

ITP: Immune Thrombocytopenic Purpura; **ICH:** Intra-Cranial Haemorrahge; **AGE:** Acute Gastroenteritis; **IV IG:** Intra-Venous Immunoglobulin; **NSAIDs:** Non-Steroidal Anti-Inflammatory Drugs; **AVM:** Artero-Venous Malformation; **CBC:** Complete Blood Count; **CT:** Computerized Tomography.

SUMMARY

- Immune thrombocytopenia induced intracranial haemorrhage in a 3-year-old female.
- Risk factors for ITP to progress to ICH was discussed.
- Previous case reports on ITP induced ICH was reviewed

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