Original Research Paper

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Paediatrics

" HEADACHE IN AN ADOLESCENT, AN UNUSUAL CAUSE "

Dr Shreya Rotti	Resident, Department of Pediatrics, JJM Medical College, Davangere, Karnataka, India
Dr Nazaf Parol*	Resident, Department of Pediatrics, JJM Medical College, Davangere, Karnataka, India*Corresponding Author
Dr Spoorthi S M	Assistant Professor, Department of Pediatrics, JJM Medical College, Davangere, Karnataka, India
Dr Ramesh H	Professor, Department of Pediatrics, JJM Medical College, Davangere, Karnataka, India

ABSTRACT CSVT being rare among adolescents, is a common diagnosis that is missed or often delayed which is treatable as clinical features are varied. OCP use has been showed to be commonly associated with CSVT. Hence the need for high degree of suspicion and need for immediate diagnosis for better prognosis.

KEYWORDS : Headache, Oral contraceptive pills, Adolescents, CSVT.

INTRODUCTION:

Cerebral sinus venous thrombosis (CSVT) is a rare form of venous thromboembolism with an estimated incidence of 0.67 per 1,00,000 children per year (1). Risk factors are diverse and are age related. CSVT proves to be a challenging diagnosis as variable clinical spectra, variable etiologies noted. It requires high index of suspicion and fine medical skills for diagnosis. Prognosis depends on the cause and early detection.

Case report :

A 16 year old adolescent girl presented with complains of severe progressive headache since 2 weeks and non – projectile vomiting for 3 days. No h/o fever, altered sensorium, convulsions, head trauma or ear discharge seen. Had significant past history of menorrhagia for which she was treated with OCP for 2 months. She was developmentally normal and immunized for age. On receiving, vital parameters were within normal limit. Neurological examination revealed no focal deficit. Rest of the systemic examination showed no abnormality. Complete hemogram showed severe microcytic hypochromic anemia with neutrophilic leucocytosis and coagulation profile was within normal limit. MRI brain showed Acute Dural Vein Thrombosis and non visualization of Internal cerebral veins extending into inferior sagittal sinus, left transverse sinus, sigmoid sinus and proximal portion of internal jugular vein. Child was started on low molecular weight heparin and anemia was corrected. LMWH was given for 1 week subcutaneously and then oral warfarin was started with INR monitoring. Clinical improvement observed within 48 hours of starting LMHW. Repeat MRV done after 1 week showed significant dissolution of the thrombus. After 3 months, child during follow up is doing well with no further such symptoms.

DISCUSSION:

Venous drainage of the brain comprises of small cerebral veins draining into large veins of deep venous system which then empty into dural sinuses then drain into internal jugular vein (2). CSVT follows the virchows's triad that comprises of changes in blood stasis, vessel wall abnormalities and composition of blood leading to an imbalance between prothrombotic and fibrinolytic processes leading to venous thrombosis. The sinuses most affected are the superior sagittal sinus and the transverse sinus. In children, CSVT most commonly affects a single dural sinus 47.5% and 12% of cases respectively; in the same study, 30% of cases involved more than two sinuses. (3). Causes and risk factors are age dependent and highly variable. In newborns, acute systemic illness as sepsis, pneumonia, RDS are the leading cause. In childhood, previously healthy children develop CSVT mainly in setting of acute treatable head and neck infections like mastoiditis and sinusitis. Condition that predispose to disturbed regulation of coagulation or systemic circulation are also the causes seen. Abnormal levels of prothrombotic factors like in deficiencies of protein C, protein S and antithrombin III etc predispose to CSVT. Oral contraceptive use in younger females of reproductive age group for contraception and to treat other medical conditions have some more association with the CSVT.

Heller et al reported that CSVT in most cases were due to prothrombotic risk factors.(4) There are case reports of CSVT due to usage of oral contraceptives (OCP) in adults.(5) This is among the few case report of CSVT secondary to OCP use in children as far as our knowledge is concern. Few studies reported OCP's as predisposing factor in children in their study like Mallicik et al (2 cases), Wasay et al (1case), Kenet et al (1 case), Heller et al (4 cases) (2,4,6,7). Similar study done by Karanam S et al showed similar findings (8). Recent study done by Ozdemir et al showed 59% of patients had OCP – related CSVT (9).

The clinical symptoms of CSVT are varied. Seizures of various subtypes accompanied by focal or diffuse neurologic signs are the most common presentation in neonates (10,11,12), whereas in children headache, papilledema, and focal neurological deficits are the principal clinical manifestations. A wide range of possible risk factors have been shown to be associated with pediatric sinovenous thrombosis. Direct injury to the venous sinuses, chronic inflammatory diseases, nephrotic syndrome, head and neck infection, malignancy, and dehydration plays important roles in the etiology (13)

Neuroimaging is the principal basis for the diagnosis of CVST (14). Typically, an initial CT scan is performed; however, only a few cases present with characteristic features on CT scan such as the high-density shadow of the strip. After contrast enhancement, the delta sign (also called the empty triangle sign) features can be seen.

Head MRI and MRV are utilized to diagnose CVST with high sensitivity and specificity. During the subacute stage, T1WI and T2WI scans identified thrombus abnormalities essential for the diagnosis. MRV is characterized by a lack of cerebral venous sinus blood flow signal or marginal blurring, irregular lower signals, and venous collateral formation (15). Digital subtraction angiography (DSA) is considered to be the "gold standard" for the diagnosis of adult CVST. However, it is an invasive examination; thus, the compliance of pediatric case examination is limited.

In recent years, with the development of MRI technology, scientists have gradually accepted the "gold standard" for CVST diagnosis which uses the combined application of enhanced MRI and MRV examination (16).

At present, the treatment for CVST is based primarily on adult cases. The purpose of CVST anticoagulant therapy is to avoid thrombus enlargement and contribute to spontaneous thrombolysis (17). Studies have shown that anticoagulant therapy can be safely applied to children, particularly when coagulation is monitored (18,19). The current consensus is that older children diagnosed with CVST without bleeding should receive anticoagulant therapy. It is safe and effective to administer subcutaneous injections of low-molecular weight heparin (2 times daily, 180 μ/kg/d) for 2 weeks, then switch to oral warfarin for 3 months to maintain an INR of 2.0–3.0.

Clinical symptoms improved in a short period of time. In our case imagining done after 1 week showed significant improvement in MRV findings. Anticoagulant therapy is considered safe and effective. For CVST in older children, knowledge from adult cases can be used to manage the symptoms of the acute phase and improve the prognosis based on systemic anticoagulant therapy combined with improved thrombolytic therapy and interventional therapy.

CONCLUSION:

Headache in adolescents is a common entity whose causes are numerous. Adolescent females particularly with menstrual problems requiring hormonal therapy, headache noted as a side effect is a serious and worrisome issue. In such individuals high degree of suspicion for CSVT should be thought of. MRV done will confirm the diagnosed and immediate anticoagulation therapy started will show clinical and radiological improvement within a short period with no neurological deficit.

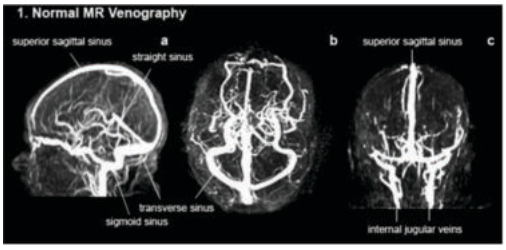

Figure 1 : Normal MRV.

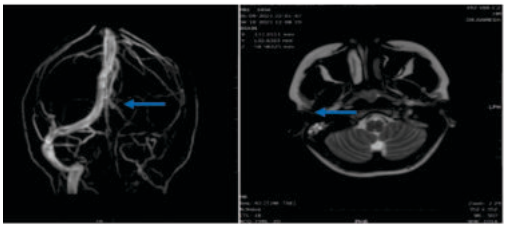

Figure 2 : CSVT in MRV image noted

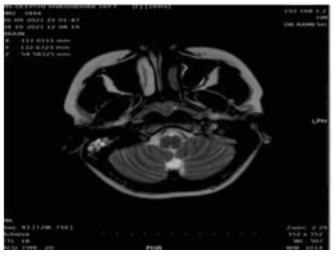

Figure 3 : Repeat MRV after 1 week.

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