

## Pediatric Idiopathic Venous Thrombosis

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### Abstract

Venous Thrombosis is a rare disorder of childhood. The scientific advances in neonatal and paediatric critical care has decreased neonatal mortality rate, however, it is associated with an increase in the incidence of complications which were rare, one such being venous thrombosis.

**Keywords:** Venous thrombosis; Idiopathic; Children

### Introduction

Venous thrombosis is a rare pediatric disorder seen more often as a secondary complication to an unrelated primary disease process. An overwhelming majority are children surviving fatal disorders such as neonatal sepsis, congenital heart disease, tumours and trauma. Venous Thrombosis can also be seen as a complication to central venous catheterisation, congenital prothrombotic disorders etc. However, idiopathic Venous Thrombosis in children is still very rare. The present case is of an eighteen month old girl child who presented with features suggestive of lower limb cellulitis but was subsequently detected to have extensive deep venous thrombosis of the lower limb veins.

### Case Summary

An eighteen month old girl child presented with complaints of fever since five days and sudden onset painful oedema of the right lower limb since one day. Examination of the patient revealed tender oedema of right lower limb from mid thigh to foot resembling cellulitis. In view of elevated leucocyte count with fever a probable diagnosis of cellulitis was made and patient was started on antibiotics. However despite a seemingly adequate therapy no improvement in patient status was seen over the subsequent 48 hours. An ultra sonogram with Duplex Colour Doppler of the lower limb was done which revealed a thrombus in the right popliteal vein. The patient was started on Low Molecular Weight Heparin in view of the extensive thrombus in the deep venous system. A follow up Doppler study after ten days of low molecular weight heparin therapy showed partial recanalization of the vein. Complete resolution of the thrombus was observed at the follow up study done after six months. Protein C, Protein S and Antithrombin III levels were normal. A 2-D echocardiogram of the heart showed a normal study. Patient is thriving well on follow up with no obvious post thrombotic sequelae.

### Discussion

Contemporary thinking dictates that venous thrombosis is uncommon in children with an incidence of 0.07 per 10,000 children [1,2].

Recent evidence of increase in the incidence can be partly attributed to heightened awareness and availability of sophisticated diagnostic techniques [1].

Unlike adults the incidence in children is linked to the age of the child [3,4]. Moreover decreased capacity to generate thrombin, increased levels of  $\alpha_2$ -macroglobulin to inhibit thrombin, and enhanced antithrombotic potential by the vessel wall preclude to a lower risk of development of Venous Thrombosis in children.

Central venous catheters are the single most important predisposing

factor for the development of Venous Thrombosis in children [5]. However, idiopathic Venous Thrombosis is rarely seen and poorly reported in literature [6].

The clinical presentation varies with the site and extent of the thrombus and is usually presents as a tender, oedematous extremity with skin changes.

Doppler ultrasound is the gold standard investigation for diagnosis of Venous Thrombosis; however an insight into its inherent limitations is important. Chest CT and 2D-ECHO are needed to assess for other causes of Venous Thrombosis [7].

Unfractionated heparin, low-molecular-weight heparin and warfarin are the mainstay in anticoagulant therapy in pediatric patients [4]. However, due to low incidence and subsequent scarcity of data, no established well defined protocols exist for anticoagulation therapy in children. Pediatric patients present a unique challenge in the provision of anticoagulation. Much of the data that currently exists are from limited studies [8]. Recurrent Venous Thrombosis is usually related to the recurrence of risk factors or inadequate anti-coagulant therapy.

Post-Thrombotic Syndrome [PTS] is becoming more apparent in children with increased incidence of Pediatric Venous Thrombosis. It has an incidence of 60% covering about one third of the patient population [9,10]. Classical presentation being a tender, oedematous extremity with skin pigmentation and ulceration, PTS in children is usually mild and venous ulceration is seldom seen. Combined fibrinolytic and anticoagulation treatment decreases this incidence [11]. Venous Thrombosis related mortality being 1% to 2% [2,9,12].

Anticoagulant prophylaxis in children with CVCs is not yet recommended in absence of proven clinical relevance needing further evaluation. Prophylactic anticoagulation is useful for children with congenital thrombophilia and associated risk factors like trauma, surgery, severe infection and CVC [1].

### Conclusion

Pediatric venous thrombosis is an enigma even to those treating

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children. In view of the increasing incidence of venous thrombosis in children and its benign presentation it is axiomatic that we consider the presence of venous thrombus in any child presenting with cellulitis of the extremity not resolving with conventional therapy. Lack of sufficient data precludes to the general lack of awareness regarding appropriate management of this condition. Consensus regarding the anticoagulant therapy and associated protocols directed towards paediatric age group is the need of the hour.

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