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Short Communication

The Causes and Risk Factors of Thrombosis in Hospitalized Infants

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DESCRIPTION

End-organ damage can result from thrombosis. For instance, changes in renal function can be caused by renal artery thrombosis; a potentially fatal myocardial infarction can be caused by coronary artery thrombosis; a cerebral infarction can be caused by intracranial thrombosis; venous thrombosis frequently obstructs venous return, resulting in limb swelling; and a pulmonary embolism caused by severe limb venous thrombosis shedding can endanger patient lives because of the obstruction of organ return. Neonatal thrombosis is more common than it used to be and can have fatal implications [1]. In recent years, its occurrence has increased. It has been observed that the children with rare venous thrombosis, including neonates, and discovered that 2/15 cases of portal vein thrombosis, with a low incidence, progressed to portal hypertension and esophageal varices, and 7/10 cases of neonatal renal vein thrombosis progressed to renal failure [2]. Since most clinical signs of neonatal thrombosis are not readily apparent, it is challenging to diagnose the condition with accuracy. Instead, Doppler ultrasound, magnetic resonance imaging, venography, and other imaging tests must be performed [3]. Very few children in the neonatology department were diagnosed with thrombosis based on clinical signs; the majority of cases were determined by color Doppler ultrasonography. For adults, the treatment guidelines for thrombosis may not always apply to younger patients or neonates. Research has indicated that the hemostatic systems of adults and children differ physiologically [4]. Children have far lower average values of coagulation factors II, V, VII, IX, X, XI, and XII than do adults. The risk of thrombosis may be decreased by the low plasma prothrombin concentration and the decline in thrombin activity [5]. The risk of thrombosis may be decreased by elevating endothelial antithrombotic capacity and increasing the fibrinolytic inhibitor alpha 2 macroglobulin. The newborn population is unique, though. Neonates have lower plasma concentrations of contact factors and vitamin K-dependent coagulation factors than adults do, and they also have lower thrombin production abilities [6]. In newborns, the degree of anticoagulant and fibrinolytic activity balance the hemostatic system. But there is hardly any spare capacity in this equilibrium. Premature babies or unwell newborns, then, are more likely to upset this equilibrium and experience bleeding or thrombotic problems [7]. Maternal factors, iatrogenic factors, neonatal factors, preeclampsia, premature rupture of membranes, diabetes, central venous catheterization, ventilator use, congenital heart disease, etc. are among the risk factors of thrombosis that are now being studied in China [8]. On the other hand, research on the causes and management of newborn thrombosis in China is scarce. In order to help doctors better understand neonatal thrombosis and to offer a resource for its prevention, early identification, and treatment, thus a retrospective analysis of the medical records of hospitalized neonates who had been diagnosed with the disease has been recorded. According to published research, the yearly incidence of venous thromboembolism in children was estimated in the 1990s to be between 0.07 and 0.14 per 10,000 children. The Canadian registry reported an incidence of around 5.3 instances per 100,000 hospitalizations for older children (>1 month old) in 2010, while the incidence of neonatal thrombosis in hospitalized children was estimated to be 2.4 per 1,000 individuals in 2010 [9]. The incidence of neonatal thrombosis has increased recently due to an increase in invasive procedures such as central venous catheterization (central venous catheterization for critically unwell hospitalized children) and the advancement of imaging equipment. A significant portion of the neonates in the dataset (19.5% of all instances) experienced cyanosis and ecchymosis, which was associated with the thrombi inflamed distal vein and the venous wall's subsequent inflammatory response. An examination of systemic venous thrombosis in newborns revealed that renal veins can cause hematuria and abdominal masses, while deep vein thrombosis in the upper and lower venous systems can cause limb swelling, discomfort, and discoloration. The incidence of venous thrombosis appears to be slightly greater than that indicated by the data since both arteriovenous thrombosis and arteriovenous thrombosis were included in this investigation. In one study, central venous catheterization, sepsis, early delivery, hypoxia, dehydration, liver dysfunction, inflammation, and maternal status were all found to be risk factors for newborn thrombosis. Severe sepsis, hypoxia, dehydration, central venous

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catheterization, and inherited and acquired thrombophilia were found to be significant risk factors for thrombosis in preterm infants. Sepsis, hypoxia, dehydration, central venous catheterization, and genetic and acquired thrombophilia were found to be significant risk factors for thrombosis in preterm newborns by another risk factor analysis [10].

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