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Caval Thrombus in Wilms Tumor Patients

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Introduction

The most common solid renal tumour in childhood is Wilms tumour. Since the 1970s, there has been significant progress in the treatment of nephroblastoma. Today, the 5-year survival rate exceeds 90%. This success has come as a result of prospective, randomised, multicenter trials conducted by the International Society of Pediatric Oncology, the Children's Oncology Group in North America, and others, which allow for better treatment stratification based on individual patient risk factors. However, there are some subgroups for whom treatment remains difficult. This includes tumour extension into the vena cava. Intracaval tumour thrombus occurs in 4-10% of cases and can range in size from infrahepatic to intracardiac. In these cases, tumour removal from the vessel is also required, which can be complicated.

Description

When imaging studies were not available, the diagnosis of vena cava thrombus was based on surgical findings of a VCT when imaging studies were not available. Computed tomography or magnetic resonance imaging was used to classify tumour and thrombus extension into the VC. There were five types of vena cava extension: none, infrahepatic, retrohepatic, suprahepatic, and intracardiac. Radiological imaging pairs were used to assess the effect of chemotherapy on the development of thrombus in those who received PC [1]. Wilms tumour is characterised by continuous extension into the vena cava with the formation of a thrombus. We discovered 148 cases of tumour thrombus in the inferior vena cava in our large cohort of 3015 Wilms tumour patients. This study is one of the largest published evaluations of VCT patients in the last 20 years. The frequency is consistent with other studies' findings, but lower than the 6% reported by Shamberger.

To assess tumour extension at diagnosis and during follow-up, a combination of MRI/CT and ultrasound has been used. Because of its reproducibility, CT and, more recently, MRI have been chosen as the standard procedure because they allow tumour staging, chemotherapy monitoring, and preoperative planning through volume rendering and three-dimensional postprocessing. Because of its excellent visualisation of soft tissue, MRI is particularly useful in determining the extent of a tumour, particularly in the inferior vena cava. When compared to ultrasound, MRI provides additional benefits. Additional findings led to a change in local stage and treatment in nearly every second patient in their study. In this regard, tomographic imaging enables accurate staging and prevents undertreatment. Doppler ultrasonography is a simple technique that also provides excellent results [2]. The extent of the thrombus is classified into five levels in our study protocol: none, infrahepatic, retrohepatic, suprahepatic, and intracardiac. These are radiologically determined levels based on the tumour thrombus's upper extent. Staehler, Pritchett, and Hinman have proposed alternative classifications. In our study, two-thirds of patients had infrared VCT, which is comparable to other studie [3-5].

Conclusion

Tumor thrombus in the vena cava occurs in only a small percentage of Wilms tumour patients. In most cases, they are asymptomatic. Preoperative chemotherapy can cause thrombus shrinkage, making resection easier. Nonetheless, thrombus removal is a complex and high-risk procedure that may involve cardio-pulmonary bypass or vascular replacement. Although surgery-related mortality is currently low, patients with VCT have a worse overall survival. As a result of our study, two risk factors for poor outcomes in WT patients with VCT emerge: diffuse anaplasia and metastatic disease, particularly in those with no remission after PC.There are no differences in survival between patients with and without VCT if metastatic disease is present, but their survival is lower when compared to patients with localised disease. Furthermore, we were able to show that survival was significantly worse in patients with VCT and metastatic disease who did not achieve complete metastasis remission after PC. This means that the difference in survival between patients who have or do not have VCT is caused by metastasis. This is supported by the fact that no patient with VCT but no metastases died.

Acknowledgement

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Conflict of Interest

There are no conflicts of interest by author.

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