



Cytodiagnostic Utility of Wilms' Tumor

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Abstract:

Abdominal mass is a frequent presenting symptom in the pediatric surgery OPD and many of them are diagnosed as Wilms' tumor. FNAC has been recognised as a useful tool for diagnosis of pediatric abdominal masses. But the role of FNAC in the diagnosis of Wilms' tumor is still controversial. FNAC in operable tumors was performed sometimes only when the diagnosis was in doubt on radiological evaluation. It is a safe technique that does not upstage the tumor and permits positive diagnosis of nephroblastoma in almost all aspirates. Here we report a case of a two and half year old girl child admitted to hospital with right subhepatic mass. Cytodiagnosis of Wilms' tumor was given. In the present case, our aim is to stress the utility and preoperative diagnostic role of FNAC in pediatric tumor.

Key words: Wilms Tumor, Neoplasms, Cytodiagnosis, Child, Humans.

Introduction

Fine needle aspiration cytology (FNAC) has been amply demonstrated to be useful diagnostic modality in pediatric renal tumors [1]. Primary renal tumors constitute the fourth commonest solid tumors of childhood; Wilm's tumor along with neuroblastoma being two most common malignant round cell tumors of abdominal cavity [2]. Primary renal neoplasms on radiology, which are amenable to surgery, require primary resection making entire specimen available for histopathology evaluation and thereby obviating need for FNAC prior to operation. On the other hand, inoperable renal tumors require it for diagnosis prior to appropriate chemotherapy. It is useful in this situation because in addition to making a positive diagnosis of nephroblastoma, anaplastic

changes of unfavourable nephroblastoma histology can be seen in aspirates [1], which may help in selection of chemotherapy regimen. In cases with high clinical suspicion of Wilms' tumor, where preoperative chemotherapy and radiotherapy are indicated, it can act as a reliable diagnostic tool to compliment the clinical diagnosis [3,4]. In this case we will discuss the cytomorphological features of nephroblastoma diagnosed by FNAC.

Case Report

A two and a half year old child clinically presented with a right subhepatic mass. The general examination of the patient was unrevealing. Her

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complete blood count were within normal limits. The ultrasound examination of the abdomen revealed a mass measuring 6x4.5x5 cm, moderately vascular, arising from right renal cortex. This was followed by a CT guided FNA for preoperative diagnosis. All the smears were examined. Microscopically, smears were cellular with a triphasic pattern. Blastemal, epithelial and stromal elements were seen. Epithelial cells were arranged in tubular pattern [Fig.1]. Some singly scattered cells were also seen. Loosely cohesive sheets of small blastemal cells having round hyperchromatic nuclei and moderate amount of cytoplasm were present [Fig.2]. Epithelial component revealed glomeruli, rosettes and tubules. Few fragments of myxoid tissue consisting of spindle cells were seen. Background was haemorrhagic. A final diagnosis of nephroblastoma was made.

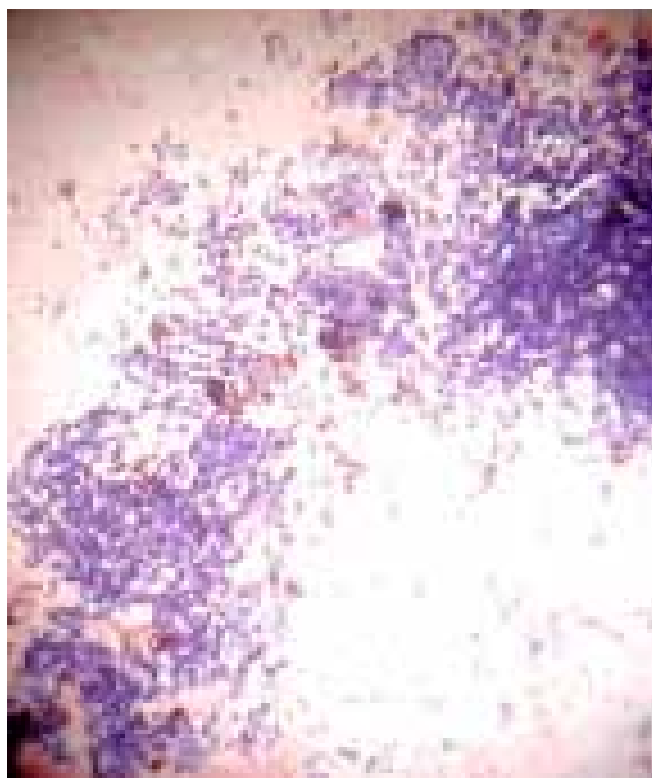


Fig.1: Smear shows epithelial elements and glomeruli.

Discussion

Fine needle aspiration cytology, a well-established technique in adult oncology, is now being increasingly applied to childhood tumors as it permits a rapid diagnosis with minimal trauma, morbidity, and a low complication rate. It also eliminates the need for anaesthesia and hospitalization [5]. However despite this the exact role of FNAC in evaluation of renal masses of children is unclear and controversial.

Inoperable renal tumors require FNAC or biopsy for diagnosis prior to appropriate chemotherapy. FNAC is useful in this situation because in addition to making a positive diagnosis of Wilms' tumor anaplastic changes of unfavourable Wilms' tumor histology has been seen in aspirates, which may help in the selection of chemotherapy regimen. FNAC in operable tumors are performed sometimes

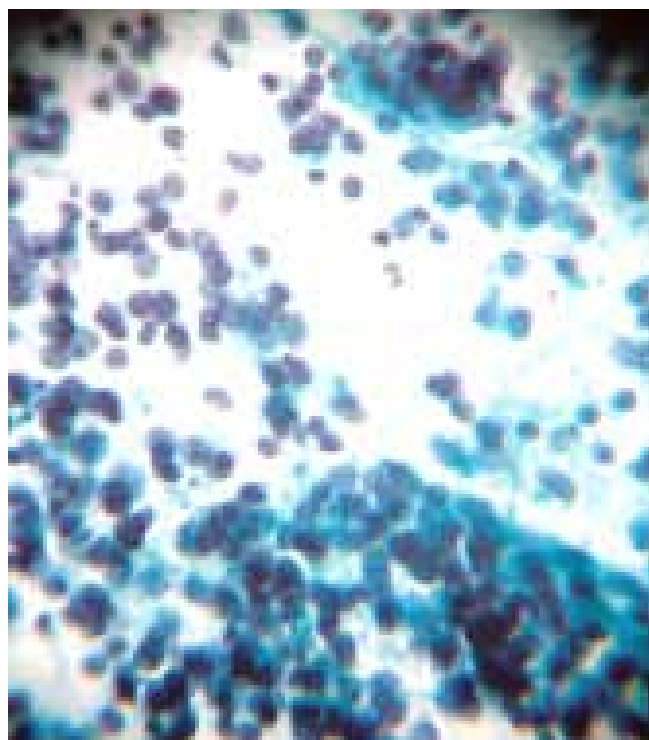


Fig.2: Smear shows blastemal elements and tubules.

only when the diagnosis is in doubt on radiological examination [1]. Over the last few years FNA has been used more extensively in the diagnosis of pediatric solid tumours. A diagnostic sensitivity of 76-95% and specificity of 81-100% has been claimed [4]. Nayak A *et al.* analyzed the cytomorphologic spectrum of Wilms tumor on fine needle aspiration in 110 cases. This is the largest series reported to date [6]. Cytological features of Wilms' tumor such as blastemal cells, tubular and mesenchymal elements were noted in our case. Studies done by various author such as Dey *et al.* found blastemal cells in all their 15 cases, Quijano and Drut found blastemal cells in all cases but stromal cells in 90% and epithelial cells in only 40% cases [7].

The differential diagnosis of Wilms' tumor includes malignant round cell tumors such as neuroblastoma, non-Hodgkins lymphoma, rhabdomyosarcoma and other pediatric renal tumours such as mesoblastic nephroma, cystic nephroma, rhabdoid tumour and clear cell sarcoma. Smears with predominant blastemal component may be mistaken for neuroblastoma. But the rosettes of neuroblastoma are multilayered and contain central, pink delicate fibrillary material representing neurophil. Tumor cells in non-Hodgkins lymphoma are round, monomorphic, discrete and do not form clusters. Lymphoglandular bodies may be present in the background. Differentiating Wilms' tumor from rhabdomyosarcoma may pose a problem but the presence of bimodal population of cells in smears and localization of tumour in kidney by imaging techniques would favour a diagnosis of Wilms' tumor. Fluid aspirate is especially seen in cystic lesions of kidney [4].

Conclusion

To conclude FNAC can contribute as an useful tool for diagnosis of Wilms' tumor made on morphology and immunochemistry in almost all instances. The main advantage of preoperative FNAC is the early identification of stroma predominance, anaplastic change, and separation from clear cell sarcoma of kidney.

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