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CASE REPORT

Cytological findings in bilateral Wilms tumor

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ABSTRACT

Diabetic Fine needle aspiration cytology (FNAC) can act as a useful and reliable pre-operative procedure in pediatric renal tumors. It is a safe technique that does not upstage the tumor. Primary renal tumors constitute the fourth commonest solid tumors of childhood. Wilms tumor along with neuroblastoma being two most common malignant round cell tumors of abdominal cavity. Here we report 2 years old male child presented with mass in left flank and left lumbar region. Clinicoradiological diagnosis of bilateral Wilms tumor was kept. In view of this diagnosis, CT guided FNAC was done. Cytodiagnosis of Wilms tumor was given. In this case report we discussed the interesting cytological findings of presence of many skeletal muscle fibers with prominent cross striations in Wilms tumor which are not described in FNAC smears of any case in the literature reviewed. So this case is presented here for its rare cytological findings.

Key words: FNAC, Wilms tumor, small round cell tumor (SRCT)

INTRODUCTION

Primary renal tumors constitute the fourth commonest solid tumors of childhood; Wilms tumor along with neuroblastoma being two most common malignant round cell tumors of abdominal cavity.[1] The differential diagnosis of Wilms' tumor include malignant round cell tumors such as neuroblastoma, Non-Hodgkin's lymphoma, rhabdomyosarcoma and other pediatric renal tumors such as mesoblastic nephroma, cystic nephroma, rhabdoid tumor and clear cell sarcoma. In cases with high clinical suspicion of Wilms' tumor, where preoperative chemotherapy and radiotherapy are indicated, FNAC can act as a reliable diagnostic tool to compliment the clinical diagnosis.[2, 3] This case was presented here for presence of plenty of skeletal muscle fibers with prominent cross striations in FNAC smears. This is a very rare cytological finding of Wilms tumor.

CASE REPORT

2-year-old male child presented with mass in left flank and left lumbar region of 3 months duration. X-ray abdomen revealed ill- defined soft tissue haziness in left lumbar and iliac region with regional lateral displacement of pro-peritoneal fat plane. The small bowel loops appear displaced to right side. X ray chest was normal. Haemoglobin was 8.6gm%. Complete blood counts were within normal limits. Blood urea and serum creatinine levels were at higher limits of normal. Computed tomography of abdomen illustrated a large well defined heterogeneous, hyper

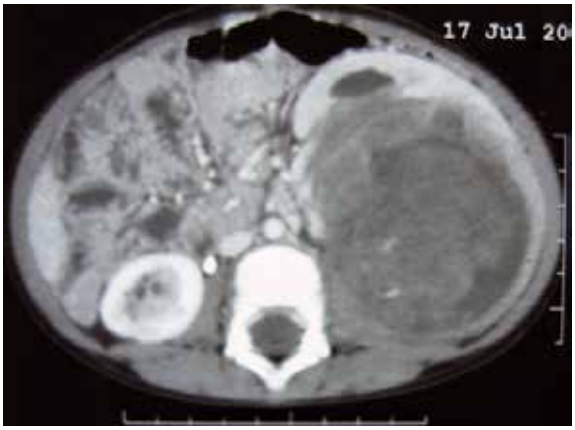

Figure 1, CT scan picture showing bilateral tumor mass in kidneys.

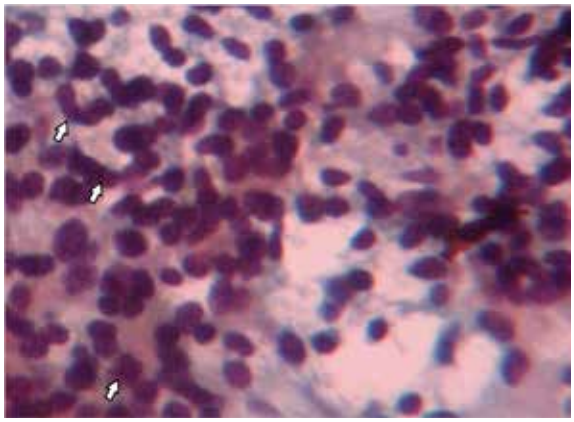

Figure 2, Photomicrograph of kidney aspirate showing epithelial cells arranged in tubules (arrows) and admixed few blastemal cells (H&E stain, X 400).

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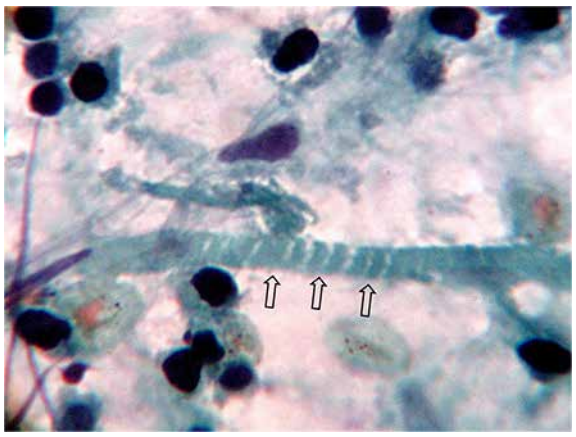

Figure 3, Photomicrograph of kidney aspirate showing skeletal muscle fibers with prominent cross striations (arrow) and scattered cells (Papanicolaou stain, x1000).

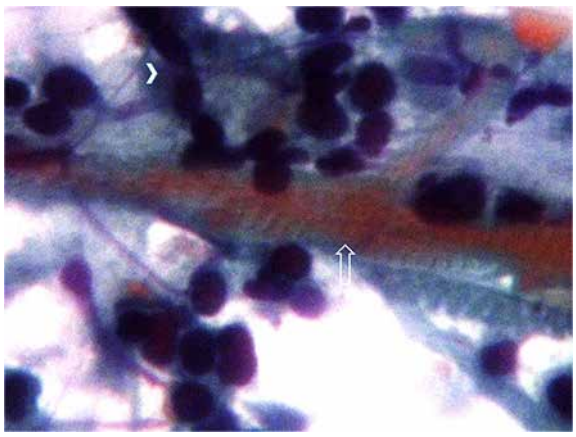

Figure 4, Photomicrograph of kidney aspirate showing skeletal muscle fibers with cross striations (arrow) and epithelial cells arranged in tubules and group (arrowhead) (Papanicolaou stain, x1000).

echoic lesion, measuring 9x8 cm was seen extending into the left renal vein and inferior vena cava (just upto the commencement of the hepatic segment). Tumor is also seen extending into the left pelvicalyceal system. Small SOL involving the lower polar region of right kidney was also seen (Fig. 1) Clinicoradiological diagnosis of bilateral Wilms tumor was kept. In view of this diagnosis, CT guided FNAC was done. Smears were cellular with a triphasic pattern. Blastemal, epithelial and stromal elements were seen. Epithelial cells were arranged in tubular pattern, showing mild anisonucleosis and pleomorphism. (Fig. 2). Some singly scattered cells were also seen. Many skeletal muscle fibers with prominent cross striations were present (Fig. 3, 4). Rhabdomyoblastic differentiation was also seen. As classical features were seen, the cytodiagnosis of Wilms tumor was given.

DISCUSSION

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. Smears were triphasic (blastema, tubules and stroma) in 44 (40%), biphasic (blastema & tubules) in 36 (32.7%) and monophasic (blastema alone) in 30 (27.3%). Stromal predominance was seen in 11 aspirates (10%) and five showed rhabdomyoblastic differentiation.[4]

FNAC is a useful pre-operative procedure in pediatric renal tumors. It is a safe technique that does not upstage the tumor and permits positive diagnosis of Wilms tumor in almost all aspirates with use of immunocytochemistry and WT-1. Advanced information on diagnosis of Wilms tumor, especially the presence of stroma predominance or anaplastic change is a guide to selection and monitoring of chemotherapy as stromal predominance and anaplastic change are early indicators of chemoresistance.[5] The various cytomorphological features, alone or in conjunction with other cytologic features, and clinical/imaging findings are very useful in the diagnosis of specific types of small round cell tumors (SRCT).6 Differential diagnosis of SRCT is particularly difficult due to their undifferentiated or primitive character. Tumors that show good differentiation are generally easy to diagnose, but when a tumor is poorly differentiated; identification of the diagnostic, morphological features is difficult and therefore no definitive diagnosis may be possible. As seen in several study reports FNAC has become an important modality of diagnosis for these tumors.[2]

Alam K et al. studied 34 cases of Wilms tumor in children, presented with lump in abdomen. Bilateral Wilms tumor is seen in 2 (5.8%) cases. The differential diagnosis of Wilms' tumor include malignant round cell tumors such as neuroblastoma, Non-Hodgkin's lymphoma, rhabdomyosarcoma and other pediatric renal tumors such as mesoblastic nephroma, cystic nephroma, rhabdoid tumor and clear cell sarcoma. In cases with high clinical suspicion of Wilms' tumor, where preoperative chemotherapy and radiotherapy are indicated, FNAC can act as a reliable diagnostic tool to compliment the clinical diagnosis.[3] Smears with predominant blastemal element may be mistaken for neuroblastoma. But the rosettes of neuroblastoma are multilayered and contain central pink, delicate fibrillary material. Tumor cells in non-Hodgkin's lymphoma are, round, monomorphic, discrete and do not form clusters. Lymphoglandular bodies may be present in the background of lymphoma. Differentiating Wilms tumor from rhabdomyosarcoma may pose a problem since rhabdomyoblasts can be found in both lesions; but presence of bimodal or trimodal population of cells in smears and location of tumor in kidney by imaging technique would favour a diagnosis of Wilms tumor. Differential diagnosis of cystic nephroblastoma should be considered especially if fluid is aspirated.[2] Presence of eccentric cytoplasm in cord cells and nuclear grooves are the key for differentiation of clear cell sarcoma from Wilms tumor.[7]

In our case the tumor masses were arising from kidneys and cytology showed triphasic pattern composed of blastemal, epithelial and mesenchymal (stromal)

components. Diagnosis was not difficult in this case. This case was presented here for presence of plenty of skeletal muscle fibers with prominent cross striations in FNAC smears. This is a very rare finding in FNAC of Wilms tumor. Rhabdomyoblastic differentiation is described, but mature skeletal muscles with prominent cross striations are not mentioned in any case of the reviewed literature on cytomorphology of Wilms tumor.

CONCLUSION

FNAC can contribute in early diagnosis of Wilms' tumour, particularly in cases with high clinical suspicion and where pre-operative chemotherapy and radiotherapy are indicated.

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