

Case Report

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Adult Wilms' Tumour: A Rare Presentation of Two Case Reports with Review of Literature

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Abstract

Nephroblastoma (Wilms' tumor) the most common malignant renal tumor in childhood, is extremely rare in adults. The diagnostic is usually made by pathologic examination of a surgical specimen. Despite its aggressive treatment, such as radical surgery, chemo and radiotherapy; prognosis of nephroblastoma in adults is worse than in children.

The authors report the clinical manifestations, complementary explorations, treatment, and results of two cases of nephroblastoma incidentally diagnosed in adult age.

We conclude that the possibility of an adult Wilms' tumor should be considered when a patient presents with pain in the flank and a renal mass.

Keywords: Wilms' tumor; Nephroblastoma in adults; Rare

Abbreviations: CT: Computed Tomography; NWTS: The National Wilms' Tumour Study; MRI: Magnetic Resonance Imaging; WT: Wilm's Tumor

Introduction

Wilms' tumor (nephroblastoma) is a malignant renal tumor that arises from abnormal proliferation of metanephric blastema without differentiation into glomeruli and tubules. It is the most common malignant kidney tumor in children and accounts for 6% of all childhood malignancies. Nephroblastoma is a very rare tumor in the adult age group. Only 3% off all Wilms' tumors are diagnosed in age over 16 and only near 200 cases have been reported in the world medical literature [1].

Because of the rarity of adult Wilms' tumour, randomized trials cannot be undertaken and results of paediatric trials should be considered. The overall results of treatment and prognosis of nephroblastoma in adults are generally less favorable than in children.

In this paper two cases of incidentally diagnosed Wilms' tumors in adults are described. The diagnostic and therapeutic approach to our patients is presented and the pertinent literature is reviewed.

Cases Report

Case 1

A 32-year-old male was admitted to department of urology from a local hospital due to aching loin pain radiating to scrotum. The general examination of the patient was unrevealing. Abdominal examination revealed a mildly tender mass palpable in the right lumbar region.

An ultrasound examination of the abdomen revealed an echogenic mass in the lower part of the right kidney measuring 12×10 cm. Abdominal CT scan (Figure 1) showed a heterogenic, irregular Hypo attenuated mass in the lower part of the right kidney measuring $10.5\times8\times9$ cm and infiltration of perirenal fatty tissue with associated para aortic and mesenteric lymphadenopathy.

A provisional diagnosis of renal cell carcinoma was made and right radical nephrectomy, and lymph node dissection were performed.

The nephrectomy specimen weighed 1000 grams and showed a solid tumor measuring $10 \times 10 \times 9$ cm. occupying lower and central part

of right kidney, it was composed of solid necrotic and hemorrhagic areas. The cut surface was yellowish white. The most of adjacent renal parenchyma and perirenal fatty tissue were infiltrated. The renal capsule was destroyed.

Microscopically, the tumor was composed of biphasic pattern comprising of blastemic and epithelial components with the blastemic element showing undifferentiated dense cells with oval nuclei exhibiting frequent mitoses. The epithelial element comprised of tubules and pseudo-rosettes, necrosis comprised 50% of the area and there was no evidence of cellular anaplasia (Figure 2). Vascular invasion was absent and one peri renal lymph node was metastatic. The histopathological diagnosis of high risk biphasic nephroblastoma was established.



Figure 1: Case 1. Abdominal CT scan showing a voluminous, irregular Hypo attenuated mass in the lower part of the right kidney.

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Figure 2: Case 1. A biphasic adult Wilms' tumor exhibiting a epithelial component and stromal component.



After the pathological diagnosis, a thoraco-abdominal CT scan was

After the pathological diagnosis, a thoraco-abdominal CT scan was performed, which revealed multiple lung and liver metastasis. (Figures 3a and 3b) and patient was classified as stage IV.

The patient received a multimodal therapy as per NWTS (The National Wilms' Tumour Study) protocol with sequential doses of 200 mg/m² carboplatin combined with 150 mg etoposide for days 1-3, and 50 mg/m² doxorubicin for day 1 in combination with 450 mg/m² cyclophosphamide for days 1. Substantial improvement was recorded with a very good radiologic response up to 70% after three months of treatment (Figures 4a and 4b). No lung radiation or kidney bed radiation was given. Unfortunately, this response persisted 6 months only; the disease progressed, and because of clinical deterioration, no second line of chemotherapy was given, then the patient died 11 months after diagnosis.

Case 2

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An 31 years old femal was referred by her general practitioner for





Figure 4: Case 1: (a) post chemotherapy CT scan showing good response in both lung and (b) liver metastasis.



Figure 5: Case 2: MRI assessment showing a 18,5x15 cm heterogeneous tumor mass in left kidney.

a left flank mass ,there was no history of fever, urinary symptoms or weight loss. General examination revealed mild tenderness located in left flank. MRI assessment showed a 18.5×15 cm heterogeneous tumor mass in left kidney (Figure 5). Additional staging that included a thoracic and abdominal CT scan all showed healthy results.

In view of the high index of suspicion of malignancy, a left radical nephrectomy and adrenalectomy were performed.

The excised left kidney weighed 1750 grams, and the tumor measured 18×14 cm. The cut section was grey white with multiple areas of necrosis and hemorrhage. The adjacent renal parenchyma appeared normal. The renal capsule was intact.

Histopathologically, the tumor was composed of epithelial, blastemic and stromal elements. There was no capsular involvement, hilar vascular invasion or lymph node metastasis. Immunohistochemistry (IHC) staining was performed and the tumor

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Figure 6: Prominent immunoexpression of the WT1, studied in paraffinembedded tissue section.

cells were strongly positive for WT1 studied in paraffin-embedded tissue section (Figure 6). The histopathological diagnosis of high-risk nephroblastoma was established and the tumor was classified as stage II N0, but the patient refused to receive adjuvant chemotherapy. One year later she was admitted in our department with head ache, and bone pain after deterioration of the general condition. A CT scan of the brain thorax and abdomen showed multiple metastases in the brain, in the thoracolumbar vertebrae, and in the sacroiliac joint. Whole-brain radiotherapy was performed, and the patient started chemotherapy adapted from the protocol of the International Society of Paediatric Oncology [SIOP], chemotherapy was discontinued after the fourth cycle because of clinical deterioration, no second line of chemotherapy was given, and the patient died 25 months after diagnosis.

Discussion

Wilms' tumor or nephroblastoma arising from embryonal metanephric blastema is the most common malignant renal tumor in childhood, in adult it is a rare disease, about two hundred cases have been reported in literature, and could have a more aggressive clinical course than that in children [1].

The oldest patient reported was 84 years [2]. In our patient as well as in study of Byrd, the mean age of patient was 30 years [3]. This is in contrast with the study of Bailey et al. [2] in which patients presented in fourth and sixth decade. To the best of our knowledge, no large series has documented the exact number of nephroblastoma cases worldwide because of confusion in terminology and difficulties in clinical and pathological differential diagnosis. Data are available in isolated case reports and small case series.

In childhood some syndromes are associated with increased risk of wilm's tumor. Among them are: Beckwith-Wiedemann, and familial Wilms' tumor type 1 and 2. Nephroblastomas can develop in association with inborn genitourinary defects like cryptorchidism, hypospadia, and aniridia (absence of the colored part of the eye, the iris). Clinically, our first patient didn't have any genitourinary abnormalities such as hypospadias, undescended testes and others, but no personal and familial phenotype was decrypted in the two cases [4].

From the genetic aspect, childhood Wilms' tumor may occur as part of a number of pediatric syndromes. This is thought to involve alterations at multiple genetic loci including WT1 (chromosome 11p13), WT2 (chromosome 11p15) and WT3. Whether the adult disease is associated with a similar genetic aberration remains to be determined, because of this a clinical genetic counseling to adult wilm's tumor must be recommended.

Clinically, the most common manifestation of Wilms' tumor at diagnosis is flank pain, abdominal mass, fever, hematuria, and is often accompanied by hypertension and coagulopathy [5-8]. However, the tumor may be detected as an incidental finding on a Computed Tomography or ultrasound scan performed for a different indication.

Based only on imaging techniques, it is difficult to differentiate nephroblastoma from renal cell carcinoma .at abdominal ultrasound nephroblastoma presents as a kidney mass with heterogeneous contrast uptake. Abdominal CT shows a large well defined heterogeneous mass. Large areas of low density are present without contrast enhancement. After IV contrast administration, the solid component shows variable enhancement, and the remaining normal parenchyma shows greater enhancement; the normal parenchyma appears as a pseudocapsule around the tumors in 75% of cases. Necrosis and hemorrhage areas are commonly none enhanced. These findings are similar to those in childhood Wilms tumor [9]. Renal cell carcinoma generally presents as a smaller, infiltrative tumor when compared with Wilms tumor. Magnetic Resonance Imaging (MRI) better delineates renal capsule and extension of the tumor. The hypo vascular nature on angiography is typical appearance of this malignancy.

Histologic characteristic is the most important prognostic indicator and histopathological criteria for child and adult group are the same.

Adult Wilms' tumor is diagnosed based on the criteria given by Kilton et al. [10]. These include 1) the tumor under consideration should be a primary renal neoplasm; 2) presence of primitive blastemic spindle or round cell component; 3) formation of abortive or embryonal tubules or glomerular structures; 4) no area of tumor diagnostic of renal cell carcinoma; 5) pictorial confirmation of histology and 6) patient's age >15 years. Kilton et al. [10] reported 35 cases of adult Wilms' tumor complying with all the above criteria.

Our cases conformed to these criteria, the first one had biphasic histology and the second one had triphasic histology and a strongly positivity of WT1.

Immunohistochemical staining for expression of selected antigens (cytokeratins, desmin, vimentin, actin, nuclear specific enolase, chromogranin, synaptophysin and, WT1) can be used to confirm the diagnostic, and to differentiate nephroblastoma from other rare tumors (renal sarcoma, mesoblastic nephroma, clear cell sarcoma, rhabdoid tumor of the kidney) [11].

The expression of WT1 is not a constant feature of all nephroblastomas. It is expressed in areas of blastema and early epithelial differentiation, but could be absent in mature stromal and epithelial elements.

The differential diagnosis of an adult Wilms' tumor with mainly epithelial differentiation includes metanephric adenoma. A predominant blastemic Wilms' tumor has a strong resemblance to lymphoma, peripheral neuroectodermal tumour and rhabdomyosarcoma; and rarely metastatic small cell tumors from lung, immature teratoma, and primary renal cell sarcoma. Extensive search for any other components is needed as a poorly differentiated renal carcinoma can have large sarcomatous areas resembling blastema [10].

As a consequence of the rarity of this disease, definitive treatment plans are undefined and randomized trials cannot be undertaken. Investigators agree that results of pediatric trials should be considered. The best results reported for adults were obtained with multimodal treatment, including radical surgery, chemotherapy, and radiotherapy of the tumor bed according to pediatric protocols, but such therapies have no established guidelines.

Reinhard et al. reported their experience with 30 cases of adult Wilms tumor treated with multimodal treatment according to pediatric protocol [12]. A complete remission was achieved in 24 of their patients. At median follow-up of 4 years, Event-free survival was 57%, and overall survival was 83%. They concluded that adults can be cured in a high percentage by a multimodal treatment according to pediatric protocols.

Although, retrospective data suggest that Wilms' tumor in adults seem to have a worse prognosis than in the pediatric population, the worse outcome likely stems from incorrect diagnosis, inadequate staging and under treatment.

However, an update from the NWTS group about treatment outcomes in adults with favorable histology Wilms' tumour described 45 patients treated in the modern era. Results of treatment for adult patients classified with Stage I/II disease published more recently are promising, with an outlook similar to that for children. The overall survival rate was 82% [13].

Lymph node samplings is recommended for all adult Wilms' tumor patients, failure to biopsy lymph nodes for WT patients not only increases the risk of local recurrence due to understating and inadequate adjuvant therapy, but is also an independent prognostic indicator of lower survival [14].

The habitually used chemotherapeutic agents are vincristine, actinomycin-D, doxorubicin, etoposide, carboplatin and ifosfamide. In patients with stage IV disease and or in progression after conventional chemotherapy, encouraging results have been published with high-dose chemoraditherapy followed by allogeneic bone marrow transplantation or conventional combination chemotherapy with cisplatin and etoposide [15].

Conclusion

As presented in literature adult Wilm's tumor is a rare kidney tumors usually diagnosed incidentally. It's should be taken into consideration in young patients presenting with a large kidney mass, fast tumor growth and unusual imaging findings. The treatment protocols of these tumors are similar as those used in children, although, retrospective data indicates that the adults are more likely to have worse outcomes for a variety of reasons.

References

- 1. Thevendrana G, Farne HA, Kaisary AV (2010) Wilms' Tumor in a 37-Year-Old. J Clin Med Res 2:194-197.
- Bailey LE, Durkee CT, Werner AL, Finley RK Jr (1987) Wilms' tumors in adults. Am Surg 53: 149-155.
- Byrd RL, Evans AE, D'Angio GJ (1982) Adult Wilms tumor: effect of combined therapy on survival. J Urol 127: 648-651.
- Metzger ML, Dome JS (2005) Current therapy for Wilms' tumor. Oncologist 10: 815-826.
- Tushar VP, Kirti MP, Shilin NS, Bharat JP,Asha SA,et al. (2008) Adult Wilms' tumor. Indian journal of medical & pediatric oncology 29: 37-40.
- Hentrich MU, Meister P, Brack NG, Lutz LL, Hartenstein RC (1995) Adult Wilms' tumor. Report of two cases and review of the literature. Cancer 75: 545-551.
- Reinhard H, Aliani S, Ruebe C, Stöckle M, Leuschner I, et al. (2004) Wilms' tumor in adults: results of the Society of Pediatric Oncology (SIOP) 93-01/ Society for Pediatric Oncology and Hematology (GPOH) Study. J Clin Oncol 22: 4500-4506.
- Morrison IS (1985) The ultrasonic and angiographic appearances of Wilms tumours in adults. Australas Radiol 29: 345-348.
- Fishman EK, Hartman DS, Goldman SM, Siegelman SS (1983) The CT appearance of Wilms tumor. J Comput Assist Tomogr 7: 659-665.
- Kilton L, Matthews MJ, Cohen MH (1980) Adult Wilms tumor: a report of prolonged survival and review of literature. J Urol 124: 1-5.
- Choi YJ, Jung WH, Shin DW, Park, Iyu CJ (1993). Histopathological and immunohistochemical features of Wilms tumor. Korean J Pathol 27: 339-348.
- 12. Abratt RP, du Preez HM, Kaschula R (1990) Adult Wilms' tumor. Cisplatin and etoposide for relapse after adjuvant chemotherapy. Cancer 65: 890-892.
- 13. Kalapurakal JA, Nan B, Norkool P, Coppes M, Perlman E, et al. (2004) Treatment outcomes in adults with favorable histologic type Wilms tumor-an update from the National Wilms Tumor Study Group. Int J Radiat Oncol Biol Phys 60: 1379-1384.
- Zhuge Y,Cheung MC,Yang R,Koniaris LG,Neville HL, et al. (2011) Improved survival with lymph node sampling in Wilms tumor.the journal of surgical research 167: 199-203.
- Geethamani V, Kusuma V, Gowda KM, Saini ML (2006) Adult Wilms' tumour: a case report with review of literature. Diagn Pathol 1: 46.