Systemic Management of Relapse Wilms Tumor After Radical Nephrectomy in An Adult Female, A Case Report

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ABSTRACT

Wilms tumor (nephroblastoma) is rare in adults. We present a case of 28-year old female with Wilms tumor diagnosed with pre-operative abdominal magnetic resonance imaging, histopathological analysis and immunohistochemistry. She had relapse tumor two years after primary open radical nephrectomy. She was managed with chemotherapy with the ICE regimen (ifosfamide, carboplatin, and etoposide) for six cycles with partial response and excellent functional status.

Keywords: *nephroblastoma, Wilms tumor, adult, nephrectomy, chemotherapy*

ABSTRAK

Tumor Wilms (nefroblastoma) adalah kasus yang jarang ditemukan pada orang dewasa. Kami melaporkan satu kasus, pasien perempuan, 28 tahun dengan tumor Wilms yang didiagnosis dengan pemeriksaan *magnetic resonance imaging* pre-operasi, histopatologi, dan imunohistokimia. Pasien tersebut mengalami relaps dua tahun pasca-radikal nefrektomi. Pasien kemudian menjalani kemoterapi dengan regimen ICE (ifosfamid, karboplatin, dan etoposid) selama enam siklus dengan repons parsial dan status fungsional baik.

Kata Kunci: nefroblastoma, tumor Wilms, dewasa, nefrektomi, kemoterapi

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INTRODUCTION

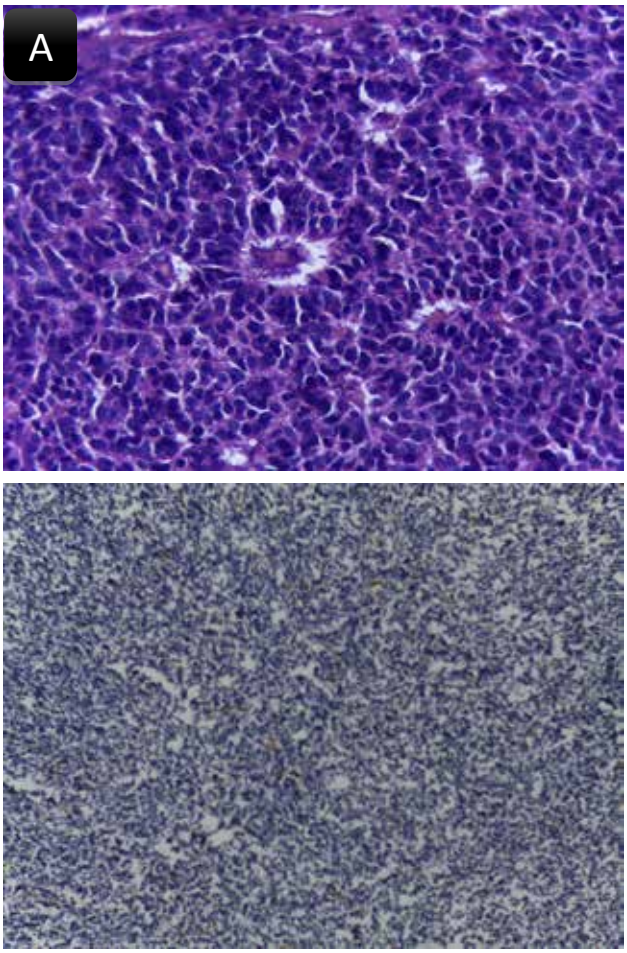
Wilms tumor (nephroblastoma) was first described by Thomas F. Rance in 1.814 and histologically described by Carl Max Wilhelm Wilms in 1899.[1] It is the second most common intraabdominal cancer of childhood, it contributes approximately 6% of all pediatric cancers and more than 95% of all kidney tumors in the pediatric age group.[2] In adults, Wilms tumor represents about 1% of all renal tumors. This usually result in treatment delay and poor treatment outcome due to an unexpected diagnosis and unfamiliarity of adult oncologist with Wilms tumor.[3] Standard treatment for Wilms tumor in Indonesia consists of surgery, chemotherapy and external beam radiation therapy. We report a case of a female adult presenting with unilateral Wilms tumor who underwent primary surgical excision and subsequent chemotherapy for relapse.

CASE REPORT

A 28-year old female presented with a progressive enlargement of right lower quadrant abdominal mass. The patient underwent explorative laparotomy in a district hospital under a pre-operative diagnosis of solid right ovarium tumor. Intraoperatively, the female reproductive organs (uterus, ovaries, and fallopian tubes) were normal. A large solid lobulated mass was found on the right paracolic area extending from right hypochondrium until right inguinal. A biopsy of the mass was performed. Histopathology result was reviewed and immunohistochemistry staining was performed by our pathologist. The pathology analysis was carcinoid tumor (IHC positive for NSE and cytokeratin). Abdominal MRI revealed a discrete cystic mass with solid and fatty tissue component on the right kidney with a size of 20.6 x 14.8 cm. There was no signs of renal vein or vena cava involvement, enlarged lymph nodes, or metastasis (figure 1). Chest x-ray also showed no signs metastasis. Pre-operative laboratory examination was unremarkable except for a high level of LDH 1029 U/L.

Figure 1: Pre-operative MRI, (A) T1-weighted + contrast axial view; (B) T2-weighted coronal view; (C) T1-weighted + contrast sagittal view.

A right open radical nephrectomy was performed. The patient was stable and discharged three days post-op. Histopathology and IHC result was nephroblastoma (positive for cytokeratin and NSE and negative for desmin and vimentin) with favorable histology (figure 2). Regular follow up after surgery was unremarkable, with no relapse on physical examination or imaging studies. However, two years after surgery, abdominal ultrasonography (US) revealed a mass on right renal fossa extending towards the right iliac region with the size of 11.7 x 11.4 cm. The patient then underwent chemotherapy by our medical oncologist using pediatric chemotherapy protocol (ifosfamide, carboplatin, etoposide) for six cycles. She experienced fatigue, nausea, vomiting and episodes of pancytopenia between chemotherapy with frequent manifestation of gum bleeding but briefly recovered with G-CSF analog, blood transfusions, and adequate broad-spectrum antibiotics.



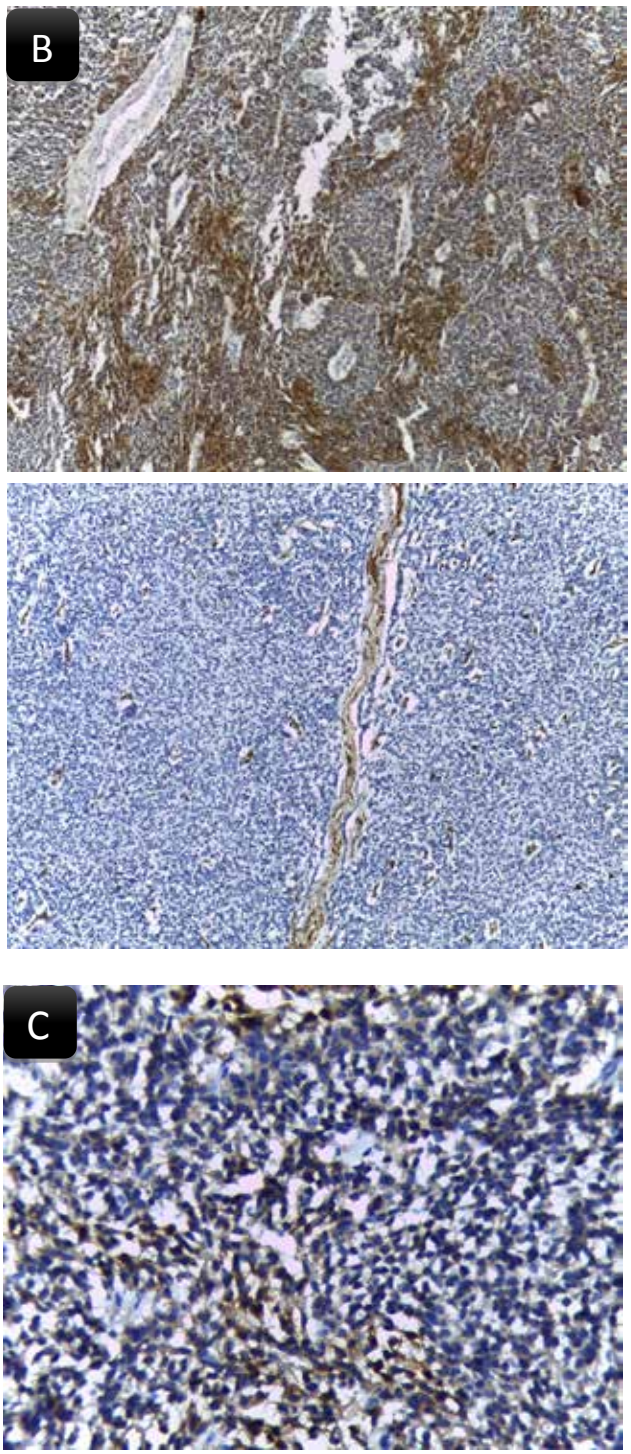


Figure 2: Results of histopathology and immunohistochemistry (IHC) examination. (A) Blastemal cells (magnification, x100). (B) Positive IHC staining with Cytokeratin (magnification, x100). (C) Negative IHC staining with Desmin (magnification, x100). (D) Negative IHC staining with Vimentin (magnification, x100). (E) Positive IHC staining with NSE (magnification, x100).

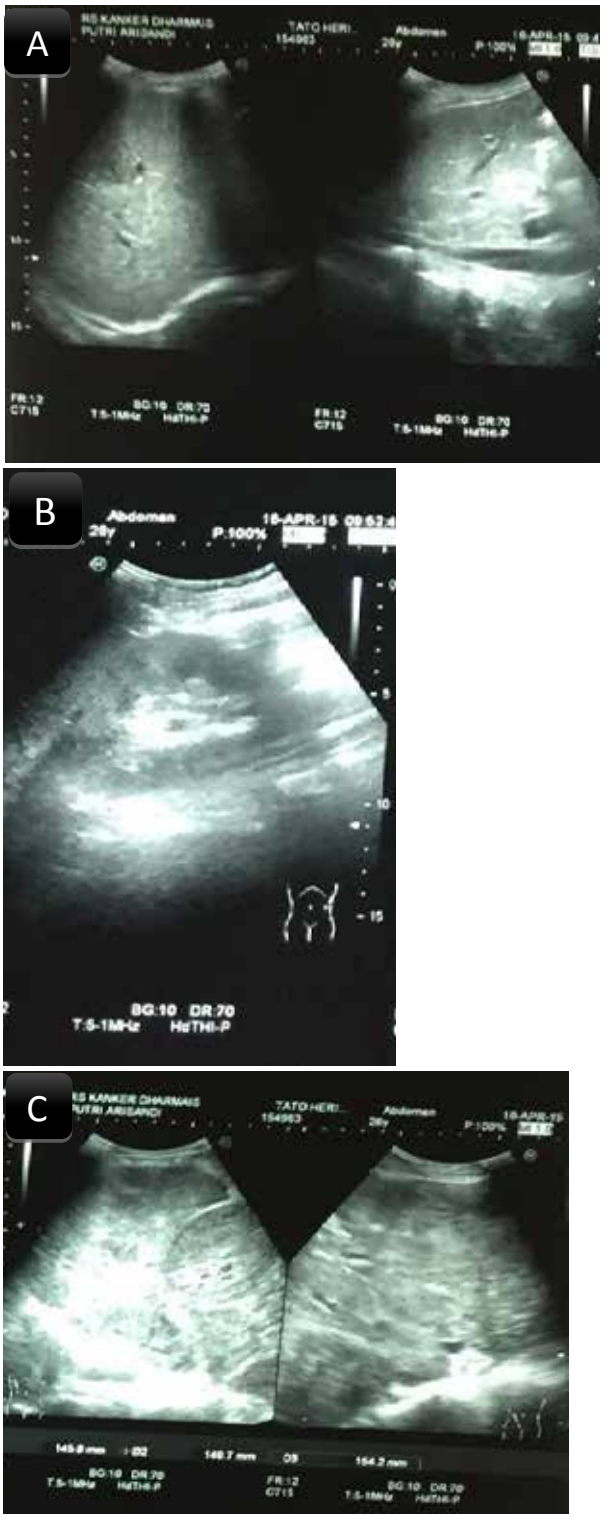


Figure 3: Follow-up abdominal ultrasound, (A) No metastasis on the liver, no mass on the right renal fossa; (B) Left kidney was normal; (C) Nodular mesenterial mass.

Six-month follow-up after six cycles of chemotherapy showed no palpable mass on physical examination, a 90 Karnofsky score, and US showed no residual mass on right renal fossa, no signs of metastasis, and the contralateral kidney was normal. However, there was a nodular mesenterial mass with the size of 9.9 x 6.52 cm (which was smaller compared to previous imaging performed three months earlier – figure 3). This nodular mesenterial mass was detected on the right iliac region, outside the right renal fossa. Chest x-ray no sign of metastasis. Laboratory examination was unremarkable. Chemotherapy was stopped and she was planned for a follow-up CT-scan in six months.

DISCUSSION

Wilms tumor, also known as nephroblastoma is the most common kidney tumor in the pediatric population.[2] In adults, Wilms tumor is a rare disease with an incidence rate as low as 1%. Treatment delay may occur because it is unexpected to found this tumor in an adult population.[3, 4] In a study by the Society of Pediatric Oncology (SIOP), the mean time to relapse is approximately two years with an overall survival of 83% and disease-free survival of 57%.[4] In addition, it has been found that older age is associated with a higher risk of relapse.[3] Metastasis occurs in 10% and 29% in children and adults respectively. Later stage were found in adults compared to children (stage III and IV in 50% adults compared to 30% children). In patients with relapse, the three-year survival is about 30%.[5] Staging is based on the anatomic stent of the tumor.[5, 6] There are two main staging systems: a prechemotherapy, surgery-based system (by National Wilms Tumor Study Group – NWTSG) and post-chemotherapy based system (by SIOP). Although about 95% of Wilms tumor may be predicted with imaging (ultrasound, computed tomography – CT, and magnetic resonance imaging – MRI), however in adults, CT or MRI may aid in diagnosis.[1,7] Immunohistochemistry may prove useful in the diagnosis of Wilms tumor, with positivity for cytokeratin, NSE, and vimentin.[6]

There is no standard therapy for treating patients with adult Wilms tumor. Some author suggested to treat adult Wilms tumor with the same protocols used in children which incorporates multimodal approach: surgery, chemotherapy, and radiation.[4, 8] To date, primary radical nephrectomy followed by chemotherapy is the only treatment strategy for patients older than 16 years.[4] Our patient underwent surgery and was disease free for two years of intensive follow-up. However, due to relapsed disease, chemotherapy was initiated. She received ICE (ifosfamide, carboplatin, and etoposide) chemotherapy protocol for pediatric patients with adjusted doses. Ifosfamide was administered at a dose of 1800 mg/m2/day for five days, carboplatin 400 mg/m2/day for two days, and etoposide 100 mg/m2/day for five days. Patients also received intravenous hydration and mesna during the five-day course of ifosfamide. The chemotherapy cycle supposed to repeat for every 21 days but in our patient, there were delays due to episodes of chemotherapy toxicity.

Adult Wilms tumor in seems to be identical to that in the pediatric population and seems to respond to the same protocols used in children. However, the rate of treatment-related hematologic and non-hematologic toxicity appears to be higher in adult patients.[4] Previous studies showed that the combined use of ICE chemotherapy protocol has resulted in an overall response rate over 80% in pediatric solid tumors with 27% complete remission and 55% partial response. It has an overall survival rate and progression-free survival rate of 63%.[5,9] SIOP recommended an administration of chemotherapy 4 weeks before surgery.[4] Indefinite pre-operative diagnosis made us leave out this step and proceed with surgery, and thus manage the relapse disease with ICE chemotherapy regimen which resulted in a partial response after six cycles. Commonly encountered toxicity with this regiment were pancytopenia, fatigue, nausea, and vomiting.

Wilms tumor is the most common kidney tumor in children may also be encountered in adults. Primary surgery with chemotherapy is the standard management in adults. In the event of relapse, ICE chemotherapy regimen provide an overall high response rate.

CONFLICT OF INTEREST

The authors declare no potential conflicts of interest.

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