SPINAL CORD COMPRESSION AND LUNG METASTASIS OF WILMS’ TUMOR IN A PREGNANT ADOLESCENT

FUNDA CORAPCIÖGLU, ÖZDAL DILLIOĞLU, NAZAN SARPER, GÜR AKANSEL, MUHITTIN ÇALIŞKAN, AND A. ENGIN ARISOY

ABSTRACT

Wilms’ tumor in adults is rare, and no treatment guidelines have been established. Spinal cord compression has also been rarely reported in all age groups. In this case report, we present a 19-year-old adolescent with recurrent Wilms’ tumor, a paraspinal dumbbell mass, metastatic involvement of the vertebral bodies, lung metastasis, and pregnancy. To our knowledge, this is the first report of a pregnant patient with Wilms’ tumor who had to undergo immediate chemotherapy with vincristine and actinomycin-D owing to spinal cord compression at 25 weeks of pregnancy. After delivery, complete remission was maintained with a regimen of ifosfamide, carboplatin, and etoposide and vincristine, actinomycin-D, and cyclophosphamide. No teratogenic or other toxic effects of vincristine or actinomycin-D were observed in the fetus.

CASE REPORT

A 19-year-old adolescent was admitted to our center with a 6-month history of abdominal pain and hematuria. On physical examination, a solid, painless abdominal mass in the upper left quadrant was detected. Abdominal ultrasonography and computed tomography revealed a large heterogeneous mass originating from the upper pole of the left kidney. No lung metastasis was detected on computed tomography. Left radical ureteronephrectomy and lymph node sampling was performed. The pathologic examination revealed triphasic Wilms’ tumor with diffuse anaplasia and no lymph node involvement. Although the patient was not a child, the histologic findings were quite clear, and we had no reason to consider other renal tumors in the differential diagnosis. Tumor had invaded into the renal sinus vessels. The tumor was Stage IIA according to the National Wilms’ Tumor Study Group staging system. Adjuvant chemotherapy was planned but she was lost to follow-up for 8 months after surgery. On readmission for a 10-day history of weakness, pain, and paresthesia of the right lower extremity, she was also pregnant (25 weeks of gestation). She had a motor deficit of the right lower limb, loss of deep tendon reflexes, hypoesthesia of the lateral site of the right foot, dropped foot, and loss of anal sphincter tonus, revealing cauda equina syndrome. Dexamethasone was immediately administered to reduce compres-
To plan the patient’s therapy, her case was discussed in the local ethics committee meeting. We decided that if the patient refused induction to deliver the baby, the pregnancy would be continued until 28 weeks of gestation, which was necessary for viability. However, during pregnancy, performing any surgical procedure to excise the tumor, radiotherapy, or chemotherapy with teratogenic potential would be impossible. The patient was informed about the therapy alternatives, but she refused immediate induction. After she provided written informed consent, her pregnancy was allowed to continue, and chemotherapy was started with vincristine and actinomycin-D, probably the least harmful therapeutic alternatives for the fetus. Cesarean section was performed at the end of 28 weeks of gestation. A female baby without any abnormalities, with weight appropriate for her gestational age (birth weight 1130 g) was born. She was hospitalized for 2 months in the neonatology unit. Surfactant was administered for respiratory distress syndrome. At 10 postnatal months, the baby was healthy.

After delivery, the tumor bed and paraspinal metastasis were irradiated with 3000 cGy, and concomitant chemotherapy was administered. We scheduled six courses of ifosfamide, carboplatin, and etoposide (ICE; ifosfamide 2 g/m² on days 1 to 3, carboplatin 600 mg/m² on day 3, and etoposide 150 mg/m² on days 1 to 3) alternated with vincristine, actinomycin-D, and cyclophosphamide (VAC; vincristine 1.5 mg/m², maximum 2 mg, on day 1, actinomycin-D 15 gamma/kg, maximum 500 gamma, on day 1, and cyclophosphamide 1.2 g/m² on day 1). The ICE and VAC courses were alternated every 3 weeks. At the end of the fourth...
course, lumbosacral magnetic resonance imaging and thorax computed tomography revealed no tumor residue. The treatment caused severe hematologic toxicity and febrile neutropenic episodes that were successfully treated. The clinical signs of the spinal cord compression did not show any regression. She was depressed because of her neurologic deficit and was unwilling to continue chemotherapy. She abandoned therapy after the fifth course in complete remission. At 11 months after the second admission, she had no new clinical signs of recurrence.

COMMENT

Because of the rarity, the true incidence of adult Wilms’ tumor is difficult to determine. Adult Wilms’ tumor tends to affect young adults, and 50% of adults present with advanced-stage disease. Although Wilms’ tumor in children classically demonstrates the curative potential of combined modality treatment, no treatment protocols for adults have been firmly established. Despite the similar histologic pattern, adult patients tend to present with higher stage disease, and the response to chemotherapy in adult Wilms’ tumor is variable. Arrigo et al. reported on 27 adult patients with Wilms’ tumor. In their report, most (15 of 27) patients had advanced-stage (Stage III and IV) disease. They recommended a three-drug regimen (vincristine, actinomycin-D, and adriamycin) plus radiotherapy to the tumor bed and metastasis for Stage II, III, and IV/FH disease. However, patients with Stage IV disease and unfavorable histologic features warrant more aggressive therapy. The drugs used for the treatment of childhood Wilms’ tumor (vincristine, actinomycin-D, adriamycin) have failed to improve survival in adult patients with advanced-stage Wilms’ tumor with unfavorable histologic features. Platinum compounds, etoposide, and ifosfamide are active drugs in childhood Wilms’ tumor. The combination regimen of ICE in patients with refractory Wilms’ tumor resulted in an 82% response rate. These chemotherapeutic agents and the ICE regimen appear to also be effective in treating adult Wilms’ tumor. The ICE regimen may be considered for the primary treatment of high-risk patients with Wilms’ tumor. In the present case, owing to the diffuse anaplastic histologic features and advanced stage, the ICE and VAC regimens were administered alternatively. The patient was probably not refractory to vincristine and actinomycin-D, because she had not yet received chemotherapy. However, she was a young adult and had Stage IV disease with anaplastic histologic features; therefore, we believed that a standard primary chemotherapy regimen might not have been adequate to control the progressive disease. Complete remission was maintained after four courses of the ICE/VAC regimen.

Skeletal and central nervous system metastases are rare in classic Wilms’ tumor with favorable histologic features at diagnosis. The unfavorable variants tend to spread more widely, and after relapse, multiple sites of metastasis are often found. Spinal cord compression in Wilms’ tumor is rare and is generally caused by invasion of the canal by paraspinal or intraspinal lesions or metastatically involved vertebral bodies. Our patient was re-admitted to our center 10 days after symptoms of spinal cord compression had begun. Regression of the neurologic deficit could not be achieved with a combination of dexamethasone, vincristine, and actinomycin-D, but surgery, radiotherapy, and a more intensive chemotherapy regimen could not be administered until after delivery.

Wilms’ tumor is extremely rare in pregnancy. Wynn et al. reported a female patient with Wilms’ tumor who had been disease free for 16 years after right nephrectomy. However, she experienced a recurrence in the contralateral kidney during her second pregnancy and underwent chemotherapy. Bozeman et al. also reported a patient diagnosed at 32 weeks of gestation. Both patients underwent chemotherapy after delivery. To our knowledge, this is the first reported patient who had to undergo immediate chemotherapy because of spinal cord compression at 25 weeks of pregnancy.
the patient was informed about the therapeutic alternatives, the potential teratogenic effects of chemotherapy, and the neurologic morbidity of the progressing tumor, she chose to continue her pregnancy until the viability of the fetus could be maintained. Limited reports are available about the teratogenicity of chemotherapy on the human fetus. Aviles et al. evaluated the potential teratogenicity of cancer treatment on 43 children born to mothers who had undergone chemotherapy during different trimesters of their pregnancy. Their results suggested that chemotherapy can be safely administered during pregnancy. Nevertheless, the size of their study was inadequate to test the teratogenicity of chemotherapy.

Some studies on mice have investigated teratogenicity. Cyclophosphamide and actinomycin-D induced teratogenesis in mice. Neuronal toxicity of vinca alkaloids was observed in dissociated cultures. However, adequate information about the teratogenicity of these agents on the human fetus is not available. In our case, we observed no teratogenic or other toxic effects of vincristine and actinomycin-D on the fetus after exposure in the last trimester of pregnancy. The baby seemed quite healthy at 10 months of follow-up.

CONCLUSIONS

Wilms' tumor may invade the spinal cord. On the basis of this single report with limited follow-up, ICE/VAC chemotherapy may be effective in maintaining remission in adult patients with advanced-stage disease. Although no teratogenic or other toxic effects were observed in the infant after exposure to vincristine and actinomycin-D in the last trimester, our experience is limited to the presented case.

REFERENCES