SECONDARY EWING SARCOMA OF A PATIENT WITH FAVORABLE OUTCOME NEUROBLASTOMA

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Abstract

Cervical neuroblastoma is relatively uncommon. Primary neuroblastoma of the neck usually arises in the cervical sympathetic ganglia. This paper present the case of a three months old child, admitted in our clinic for cervical tumoral mass, miosis and ipsilateral upper eyelid ptosis.
Key words: neuroblastoma, intermediate risk, secondary cancer.

Background

Neuroblastoma is the most common extracranial solid tumor in infancy. It is an embryonic malignancy of the sympathetic nervous system arising from neuroblasts (pluripotent sympathetic cells). Age, stage, and biological features encountered in tumor cells are important prognostic factors and are used for risk stratification and treatment assignment. The most important of the biological markers is MYCN. There is a strong relationship between 1p loss and MYCN amplification. Deletion of the short arm of chromosome 1 is the most common chromosomal abnormality present in neuroblastoma and confers a poor prognosis. With current treatments, patients with low and intermediate risk disease have an excellent prognosis with cure rates above 90% for low risk and 70%-90% for intermediate risk. In contrast, therapy for high-risk neuroblastoma the past two decades resulted in cures only about 30% of the time. The majority of survivors have long-term effects from the treatment. Survivors of intermediate and high-risk treatment often experience hearing loss. Growth reduction, thyroid function disorders, learning difficulties, and greater risk of secondary cancers affect survivors of high-risk disease.

Case presentation

A 3 months old girl with relatively good general state was admitted in our clinic for right cervical mass, clinically similar to a cervical adenitis, miosis and ptosis of the right upper eyelid, signs that were indicated a damage of the sympathetic nervous system. Biopsy and pathology exam confirmed the suspicion and diagnosed the child with neuroblastoma.

Immunochemistry: positivity for ENS and protein associated NF improved the accuracy the diagnosis.

Other lab investigation revealed inflammatory syndrome, high level of feritine and lactat dehydrogenase.

Medulograma: Relatively normal, isolated atypical cells, possible metastasis of neuroblastoma.

CT (abdominal, pelvis, chest, skull): normal. CT (neck): tumoral mass, posterior to the carotid, with calcification and mildly shifting the trachea to the left (Fig. 1).

Cytogenetics**:** A number of 25 metaphases were analyzed and indicated no deletion of 1p 36, this finding is considered to be the most important prognostic factor (Fig. 2).

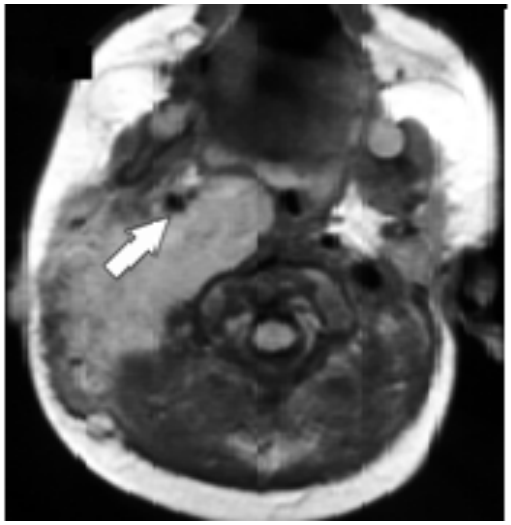

Fig.1. CT of the neck.

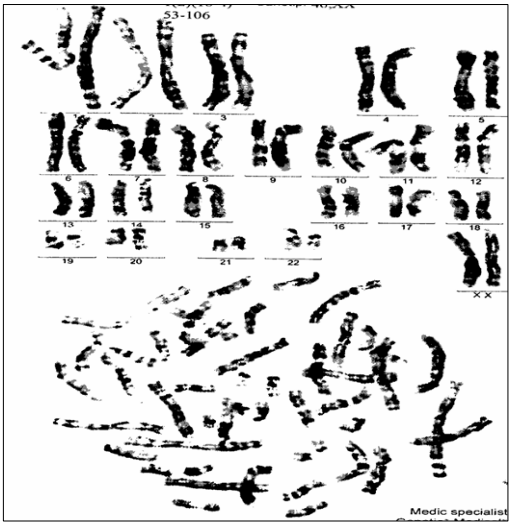

Fig. 2. Karyotype of the patient – normal.

Correlating the clinical, biological and imagistic data , the following diagnosis was established: Cervical neuroblastoma stage III – intermediate group risk.

The child received chemotherapy according NBL 94 protocol (Carboplatin + Etoposid – 3 courses Cyclophosphamide+ Adriamycin+ Vincristin – 3 courses) and had multiple admissions for cancer treatment and evaluation. Urinary tract infection,need for blood transfusion, sepsis, alopecia, toxic hepatitis, medullary aplasia have to be noted during the hospitalisation. After 19 months, the chemotherapy was stopped, the patient being declared healed.

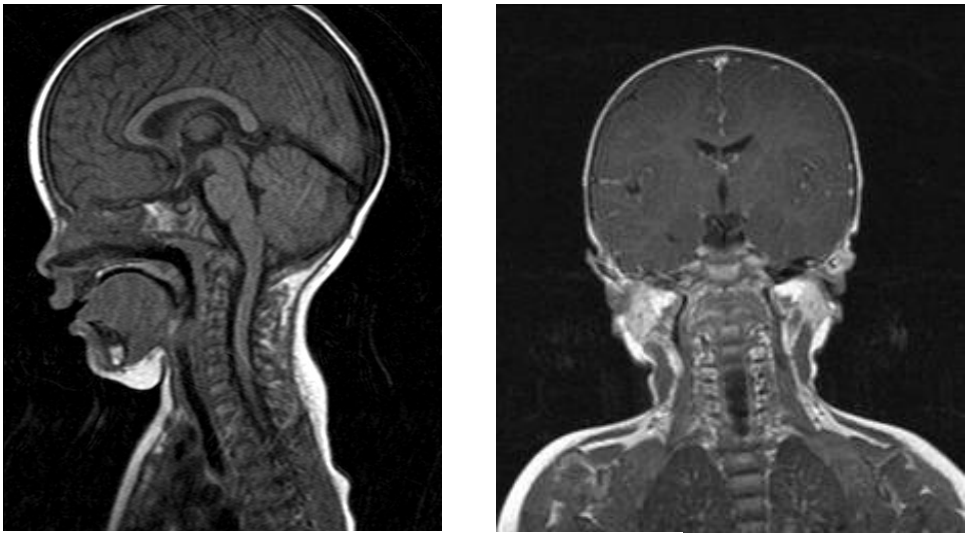

Fig. 3. Skull and neck MRI – normal.

Two years after, the patient present a tumoral mass of the left forearm. A biopsy was performed. Pathological exam revealed a PNET-stage IV, T2N1M0 (50% differentiated cells, MKI under 100, MR under 10 , stroma poor, metastasis located in the deep dermis).

Forearms X-ray: osteosclerosis alternating with osteolisis, metastasis of left radius (Fig. 4).

Forearm ultrasonography: tumoral mass of soft tissues with relatively homogeneus echo-structure, very well vascularised .

MRI result: Solid tumoral mass 9/3/3.5, deep localization, circumferential sorrounding the forearm bones, including the vascular-nervous package, the mass extends from the elbow to the radio-carpian joint, without invasion of joint space.; inflammatory diffuse changes of the radius structure (hyper-signal STIR, hiposignaling T1), osteosclerosis.

Scintigraphic bone investigation (TC 99m- MDP): slightly increased capture of left forearm, no other bones lesions (Fig. 5).

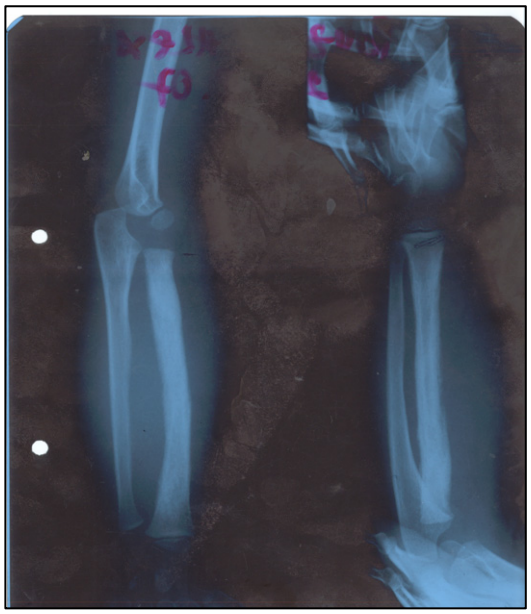

Fig. 4. Radiography reveals the bone metastasis.

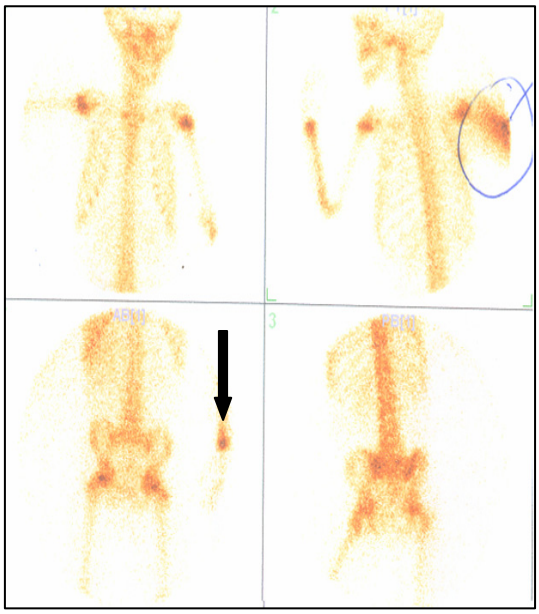

Fig. 5. Scintigraphy.

The child followed chemotherapy according to the CWS – 96 protocol. After two months, the patient was assessed by performing a MRI of the left forearm which reveals an increase of the tumor compared to the first MRI.

The interpretation of histopathology faced difficulties in differentiation of diagnosis; there was a high suspicion of second malignancy, probably soft tissue sarcoma. Therefore, a second opinion was asked from the University of Munchen who diagnosed a PNET/Ewing sarcoma (CD99, NSE, Vimentin positive; CD66, S100, CD 45 negative).

The medical staff decided for the surgical intervention of the tumor consisting in the amputation of the left forearm.

Discussion

The case is particular because primary cervical neuroblastomas are rare and account for less than 2.3% of all neuroblastomas. Considering the clinical history of this child, there is the possibility that the previous tumor also had been a Ewing sarcoma, because both types of tumor look very similar in routine staining without immunohistochemistry. Neuroblastoma continues to be one of the most frustrating childhood tumors to manage. Further consensus data are needed to provide more definitive information regarding risk stratification, treatment, and prognosis in patients with neuroblastoma.

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