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Case Report
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Secondary Osteosarcome and Klippel Feil Syndrome Case Report and Review of the Literature

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Abstract

We report the observation of a little girl aged 8 years, presenting an osteosarcoma, associated with kleippel feil syndrome; the child is followed since the age of 4 years in endocrinology for a poly malformation syndrome, associated with growth delay secondary to a partial deficit in GH by thinning of the pituitary gland. There is a notion of consanguinity of the 2nd degree.

Keywords: SKF; GH; Osteosarcoma

Abbreviations

GH: Growth Hormone; (W/H/CP)<P3: Weight, Height, Cranial Perimeter, Percentile 3; SKF: Klippel-Feil Syndrome

Introduction

Malignant osteopathies most often have genetic grounds predisposing; secondary origin is also described. Klippel-Feil Syndrome (SKF) is characterized by a defect in the segmentation of the cervical somites, resulting from a congenital fusion of the cervical vertebrae. The prevalence is estimated at 1 in 50,000 [1-3]. The symptoms associated with this syndrome vary enormously from one person to another. We report a clinical case of an 8-year-old girl with osteosarcoma, associated with Kleippel Feil syndrome and presenting multiple malformations, the child is followed since the age of 4 years in endocrinology.

Case Presentation

After 2 years of treatment with GH, Rania presented to us for pain in her right knee.

The clinical examination finds a delay in weight-gain [(w/t/CP)<P3] a swelling of the right knee measuring 10 cm × 15 cm, a poly malformation syndrome associating a triangular facies, a short neck with limitation of movements, a low implantation of the hair, small and poorly developed lips, an ascent of the right scapula and a 2/6 systolic heart murmur at the pulmonary focus.

Ultrasound of the soft parts finds a hyper vascularized tissue mass of the anterior pretibial parts with opposite bone lysis. MRI of the right knee detected a bifocal osteogenic malignant tumor. A biopsy was performed and the pathological examination concluded with a chondroblastic osteosarcoma. The extension assessment (CT scan, bone scan) is without abnormality. We have

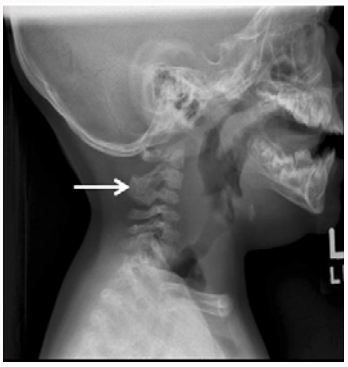

Figure 1: Standard spine and skull radio showed a right vertebral hemi block with C1-C2 fusion.

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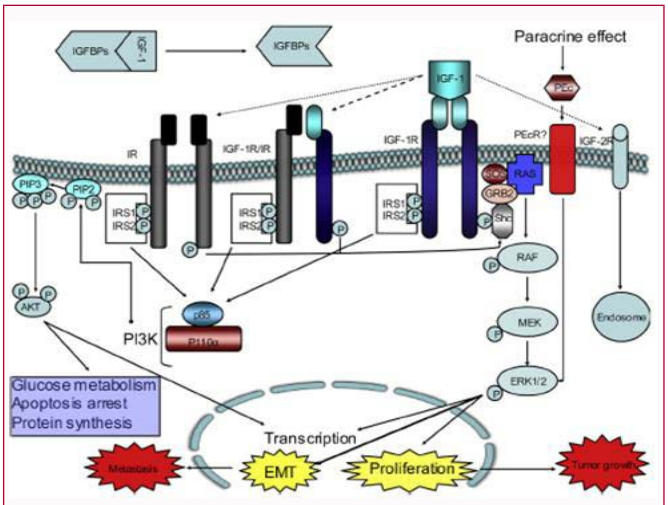

Figure 2: The effects of IGF-1 and of the Ec peptide (PEc) of the IGF-1Ec isoform in cancer. IGF-1 receptor phosphorylation recruits and phosphorylates the downstream signaling proteins IR Substrate (IRS) and the Src homology 2 domain proteins to the cell membrane. Phosphorylation of these proteins includes the activation of the two major oncogenic pathways phosphoinositide 3-kinase (P13k) that leads to Akt phosphorylation (activation) that is associated amongst others to aoptosis inhibition and the Mitogen Activated Protein Kinases (MAPK) pathways resulting in stimulation of cellular proliferation and cell motility by inducing the EMT process. Unlike IGF-1 the PEc seem to activate the MARK pathway that leads to proliferation and metastases but not the Akt pathway and it does that through an unknown receptor.

completed the explorations with a karyotype which highlights chromosomal anomalies of type 46XX. The GH stimulation test finds values between [10-20 µU/l]. Hypothalamic-pituitary MRI showed a thinning of the pituitary gland, with no visualization of the left intra-cavernous carotid artery. Standard spine and skull radio and Spinal MRI showed a right vertebral hemi block with C1-C2 fusion (Figure 1), scoliotic attitude at C7-D1. Cardiac ultrasound revealed a CIA osteum secondum.

There is a notion of 2nd degree consanguinity. Our therapeutic decision was to stop treatment with GH and to start chemotherapy according to the OMS 2006 protocol of the SFCE associating MTX at high doses and the association of VP16/IFO. The disease having progressed during treatment, an amputation was practiced followed by a chemotherapy of consolidation by the uses of association of high doses MTX and AP. After 3 months of evolution of pulmonary metastases in releasing the balloon appeared and the patient died in a table of respiratory distress.

Discussion

In our case report, we relate the appearance of osteosarcoma to the association of the genetic abnormality and to treatment with GH. Several observations emphasize the role of GH and IGF1 in stimulating metabolism and normal growth of the bone, incriminating them in the proliferation of osteoblasts in cases of osteosarcoma in humans and animals (Figure 2) [1,4]. A prospective study focused on 16 children in pre puberty age who presented a statural delay without GH deficiency and treated with GH (Genotropin®), reports that one of 16 children developed tibia osteosarcoma [2].

Conclusion

In this work, we have reported a case of osteosarcoma most likely secondary to the treatment with growth hormone. The world literature describes few cases. More studies are needed to confirm the attributability of this pathology to treatment with the GH. Likewise, the link between klippel-feil syndrome and its genetic abnormality and osteosarcoma has not been established in the literature, further studies are also necessary.

The link between klippel-feil syndrome and its genetic abnormality and osteosarcoma has not been established in the literature. Only one case of association between osteosarcoma and klippel-feil syndrome has been reported in the literature: an elderly patient 33 years old, but who also had rothmund-thomson syndrome characterized by a gene mutation on chromosome 8 involving the sequence RECQL4 which is a predisposing factor for the onset of osteosarcoma.

References

1. Raczkowski R, Schally AV, Plonowski A, Varga JL, Groot K, Krupa M, et al. Inhibition of proliferation in human MNNG/HOS osteosarcoma and SK-ES-1 ewing sarcoma cell lines *in vitro* and *in vivo* by antagonists of growth hormone-releasing hormone effects on insulin-like growth factor II. Cancer. 2002;95(8):1735-45.
2. Darendeliler F, Bundak R, Eryilmaz SK, Günöz H, Baş F, Saka N. Follow-up height after discontinuation of growth hormone treatment in children with intrauterine growth retardation. J Pediatr Endocrinol Metab. 2002;15(6):795-800.
3. Gelaw B, Ali S, Becker J. Rothmund-Thomson syndrome, Klippel-Feil syndrome, and osteosarcoma. Skeletal Radiol. 2004; 33(10):613-5.
4. Armakolas N, Armakolas A, Antonopoulos A, Dimakakos A, Stathaki M, Koutsilieris M. The role of the IGF-1 Ec in myoskeletal system and osteosarcoma pathophysiology. Crit Rev Oncol Hematol. 2016;108:137-45.