Pediatrics and Neonatology (2018) 59, 425—426

Available online at www.sciencedirect.com

ScienceDirect

journal homepage: http://www.pediatr-neonatol.com

Images

Clinical presentation of PTEN mutations

Vanna Graziani, Sara Dal Bo, Michela Giovannini, Federico Marchetti*

Department of Pediatrics, S. Maria delle Croci Hospital, Ravenna, Italy

Received Aug 28, 2017; received in revised form Oct 11, 2017; accepted Jan 12, 2018
Available online 31 January 2018

1. Case report

We describe the case of a 6-year-old girl who presented with macrocephaly and multiple lipomatous lesions. She was the fifth child of nonconsanguineous parents of Pakistani origin with no significant family history. At birth, her head circumference was above the 97th percentile and she had normal body weight and length. Brain scans showed normal results. She also displayed regular psychomotor development. At the age of 3 years, she developed left tibial swelling accompanied by pain and limping, but there was neither fever nor changes in the levels of inflammatory markers. Biopsy revealed periostitis and adipose-fibroid tissue. The patient showed improved with ibuprofen treatment. After 1 year, the tibial pain relapsed and swelling of the left forearm appeared, but there were no skin lesions. MRI showed hyperintensity of the left forearm (Fig. 1) and of the soft tissues of the left tibial area. Surgically unresectable fibrolipomas were detected, and an attempt of steroid treatment was found to be ineffective. She subsequently developed similar lesions on the left arm and the right wrist (Fig. 2). She also had persistent macrocephaly without mental retardation or other abnormalities. After performing a genetic evaluation, she was diagnosed with a de novo PTEN (phosphatase and tensin homolog deleted on chromosome 10) mutation. Abdominal and thyroid US showed normal results, and no bowel hamartomatous lesions were detected on endoscopies.

2. Discussion

Mutations of the tumor suppressor gene PTEN predispose the affected individual to phenotypically different disorders (Cowden syndrome, Bannayan—Riley—Ruvalcaba syndrome, and Proteus syndrome), with several overlapping clinical

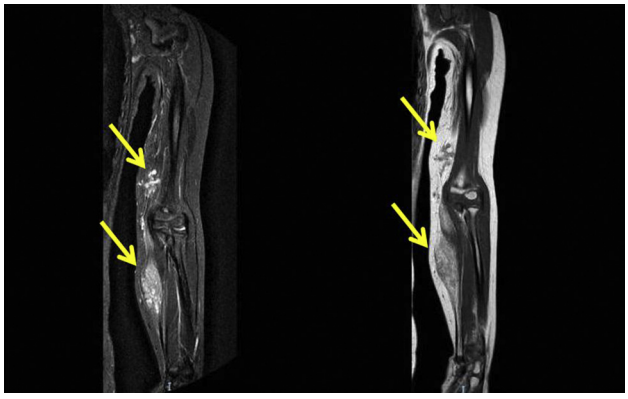

Figure 1 MRI of the left arm and the forearm before and after contrast enhancement showing a solid mass of soft tissues of the left forearm (maximum diameter: 9 cm) and the arm (maximum diameter: 3.4 cm). Both lesions exhibit dishomogeneous aspect, contrast enhancement, minimum fat tissue, and no involvement of bone structures.

* Corresponding author. Department of Pediatrics, S. Maria delle Croci Hospital, Viale Randi n.5, 48121 Ravenna, Italy.
E-mail address: federico.marchetti@auslromagna.it (F. Marchetti).

https://doi.org/10.1016/j.pedneo.2018.01.012

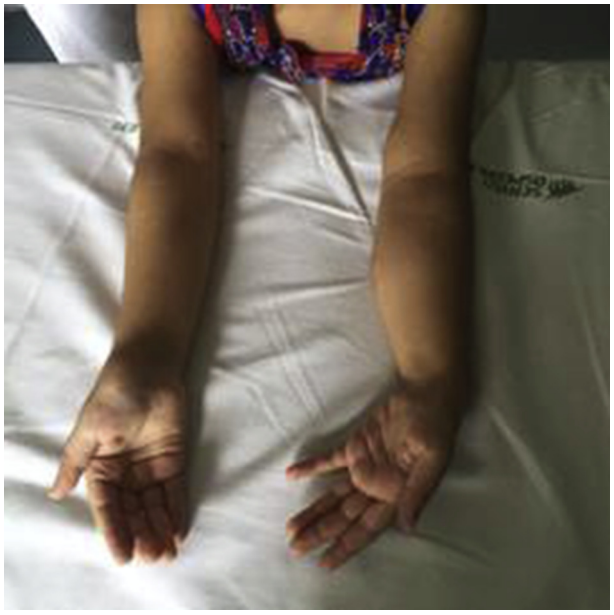

Figure 2 Swelling of the left arm, the left forearm, and the right wrist.

features, which are collectively classified as the PTEN hamartoma tumor syndrome (PHTS). The estimated incidence of PHTS is 1/100,000 to 1/200,000, which could probably be due to underdiagnosis for not carrying out genetic studies.[1]

The majority of cases are sporadic, although autosomal dominant transmission has also been described.

PTEN analysis should be considered in any child presenting with macrocephaly and dermatologic features and/or mental retardation and/or hamartomatous overgrowth involving the skin, the subcutaneous tissue, and the bowel.[2] PHTS leads to an increased risk of developing breast, skin, colorectal, endometrial, and thyroid malignancies, which indicates that cancer surveillance is the cornerstone of management.[3]

In recent years, rapamycin treatment has been proposed in some cases, with encouraging results in slowing down the growth of hamartomatous lesions.

Conflict of interest

The authors have no conflict of interest to declare.

References

1. Waite KA, Eng C. Protean PTEN: form and function. *Am J Hum Genet* 2002;**70**:829—44.
2. Busa T, Milh M, Degardin N, Girard N, Sigaudy S, Longy M, et al. Clinical presentation of PTEN mutations in childhood in the absence of family history of Cowden syndrome. *Eur J Paediatr Neurol* 2015;**19**:188—92.
3. Tan MH, Mester JL, Ngeow J, Rybicki LA, Orloff MS, Eng C. Lifetime cancer risks in individuals with germline PTEN mutations. *Clin Cancer Res* 2012;**18**:400—7.