

Massive Splenomegaly Due To Proteus Syndrome: A Rare Case Report

Chanamolu Dimple Kumar¹, Thatha Rao V², Nanda Kishore B³

¹ Chanamolu Dimple Kumar, Post Graduate Student of General Surgery, NRI Medical College & General Hospital, Chinakakani, Guntur Dist, Andhra Pradesh, India.

² Thatha Rao.V, M.S., General Surgery, Professor & HOD of the Department Of General Surgery, NRI Medical College & General Hospital, Chinakakani, Guntur Dist, Andhra Pradesh, India.

³ Nanda Kishore B, M.S., General Surgery, Assistant Professor, NRI Medical College & General Hospital, Chinakakani, Guntur Dist, Andhra Pradesh, India.

Abstract: Proteus syndrome is a congenital disorder with a variable clinical spectrum. The cause is mostly unknown, but a genetic mutation that is viable only in a mosaic pattern, has been postulated. Here we present a case of a 28 yrs female, presented with Splenomegaly, Gigantic right lower limb. The clinical findings are in conformity to the criteria for the Proteus syndrome.

Key Words: Gigantic limb, Proteus, mutation

I. Introduction:

Proteus syndrome is a congenital disorder with a highly variable clinical spectrum. Characteristically, the patients are normal at birth but progressively develop the manifestations during childhood. The cause is largely unknown, but a genetic mutation that is viable only in a mosaic pattern, has been postulated. Germ line PTEN mutations have been implicated that predispose to phenotypically different disorders with considerable overlaps like Cowden syndrome, Bannayan Riley Ruvalcaba syndrome, Proteus syndrome, and Proteus-like syndromes.[\[1,2,3\]](#)

II. Observations

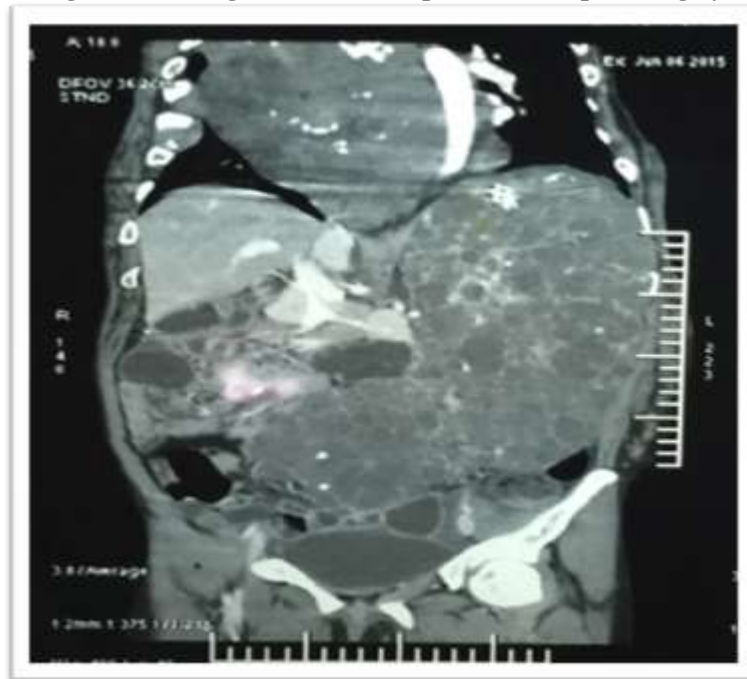
A 28 year-old woman presented to the General Surgery department with Splenomegaly, Gigantic right lower limb with asymmetrical enlargement of the digits of hands and feet along with mediastinal tumor. Chest radiograph, ECG and other biochemical parameters were unremarkable. History and Clinical examination were suggestive of Proteus syndrome.

CT scan showed a massive splenomegaly There were multiple nevi distributed predominantly over the abdomen.

Figure-1 showing disproportionate enlargement of Right lower Limb



Figure-2 showing CT Scan of the patient with Splenomegaly



The patient underwent Splenectomy and Post operative period is uneventful. Patient underwent Splenectomy & Post operative period is uneventful.

Figure 3 abnormal body habitus



Figure 4 – Post Op Splenectomy



III. Discussion

Proteus syndrome is a congenital disorder with a highly variable clinical spectrum. Characteristically, the patients are normal at birth but progressively develop the manifestations during childhood. The cause is largely unknown, but a genetic mutation that is viable only in a mosaic pattern, has been postulated. Germ line PTEN mutations have been implicated that predispose to phenotypically different disorders with considerable overlaps like Cowden syndrome, Bannayan Riley Ruvalcaba syndrome, Proteus syndrome, and Proteus-like syndromes.

It is highly variable and conspicuous by its mosaic distribution. Lindhurst et al, identified an activating mutation in AKT1 kinase in a mosaic state gene. A single-nucleotide polymorphism in this gene causes Proteus syndrome⁴. Proteus syndrome, named after the Greek God Proteus, who could change His shape at will, is a complex disorder comprising malformations and overgrowth of multiple tissues. Proteus syndrome, is also known as Wiedemann syndrome after the German paediatrician. It is believed to be exceedingly rare, with about 100-200 cases reported worldwide suggesting a prevalence of less than 1 per 1,000,000 live births.

There are three mandatory diagnostic criteria of Proteus syndrome which includes (a) mosaic distribution of lesions, (b) lesions follow a progressive course, and (c) condition appears to be sporadic in nature⁵. The patient fulfils all the mandatory criteria and confirmatory diagnostic criteria of a) Lipomas b) Capillary, venous, or lymphatic malformation & c) Facial features including, a long face, down-slanting palpebrae, ptosis, depressed nasal bridge, anteverted nares, and open mouth position while at rest. The main concern was risk of premature death due to deep vein thrombosis and pulmonary embolism caused by the vessel malformations that are associated with this disorder.

Treatment is multidisciplinary, including clinical and psychological support. Proteus syndrome results in significant social stigma, due to its rarity and disfiguring features; thus, these patients must undergo psychological counseling.⁶ Genetic counseling provides information on the nature, inheritance, and implications of genetic disorders to help individuals and families to make medical and personal decisions. Skeletal overgrowth can result in biomechanical dysfunction and functional limitation; the correction of these conditions involves epiphysiodesis, limb shortening, reduction of asymmetries, stretching, arthrodesis, arterial ligation, and even amputation; however, deformity recurrence is common.⁷ The most urgent and life-threatening complications include deep vein thrombosis and pulmonary embolism, which may have a late diagnosis due to their very low incidence in pediatric patients. Patients should be treated with anticoagulants.⁸

IV. Conclusion

Massive splenomegaly can occur due to Proteus syndrome. Morbidity and mortality due to splenomegaly in proteus syndrome can be reduced by splenectomy.

Bibliography

- [1]. Orloff MS, Eng C. Genetic and phenotypic heterogeneity in the PTEN Hamartoma Tumour Syndrome. *Oncogene*. 2008;27:5387–97.
- [2]. Lyons K, Ezaki M. Molecular regulation of limb growth. *J Bone Joint Surg Am*. 2009;91:47
- [3]. Biesecker L. The challenges of Proteus syndrome: Diagnosis and management. *Eur J Hum Genet*. 2006;14:1151–7.
- [4]. Lindhurst MJ, Sapp JC, Janie K, Johnston JJ, Finn EM, Peters K, et al. A mosaic Activating Mutation in AKT1 Associated with the Proteus Syndrome. *N Engl J Med*. 2011;365:7.
- [5]. Hamm H. Cutaneous mosaicism of lethal mutations. *Am J Med Genet*. 1999;85:342–5
- [6]. Turner J, Biesecker B, Leib J, Biesecker L, Peters KF. Parenting children with Proteus syndrome: Experiences with, and adaptation to, courtesy stigma. *Am J Med Genet A*. 2007;143A:2089-97.
- [7]. Cruz R, Nunes ALS, Fortuna CMM, Pimentel HM, Teixeira E. Síndrome de Proteus: relato de dois casos e revisão da literatura. *Rev Bras Ortop*. 1999;34:299-303.
- [8]. Slavotinek AM, Vacha SJ, Peters KF, Biesecker LG. Sudden death caused by pulmonary thromboembolism in Proteus syndrome. *Clin Genet*. 2000;58:386-9.