Available online at www.sciencedirect.com

ScienceDirect

Journal of Current Ophthalmology 31 (2019) 450–453

http://www.journals.elsevier.com/journal-of-current-ophthalmology

Case report

Pachydermoperiostosis: A clinicopathological description

Seyed Ali Tabatabaei [a], Ahmad Masoomi [a], Mohammad Soleimani [a,*], Seyed Mohsen Rafizadeh [a], Mirataollah Salabati [a], Aliasghar Ahmadraji [a], Bahram Bohrani [a], Hossein Ghahvechian [a], Zohreh Nozarian [b]

[a] *Ocular Trauma and Emergency Department, Farabi Eye Hospital, Tehran University of Medical Sciences, Tehran, Iran*
[b] *Pathology Department, Farabi Eye Hospital, Tehran University of Medical Sciences, Tehran, Iran*

Received 22 November 2018; revised 24 February 2019; accepted 4 March 2019
Available online 29 March 2019

Abstract

Purpose: To report a case of pachydermoperiostosis (PDP) and a review of the literature.
Methods: A 32-year-old man was referred to our clinic with bilateral eyelid swelling and blepharoptosis. On examination, marked blepharoptosis was noted, and his eyelids were found to be floppy. Systemic examination was significant for clubbing of digits, coarse acromegalic facial features, and furrowing and oiliness of the skin of scalp and forehead.
Results: The patient was diagnosed as a case of PDP. On the brain MRI, the pituitary gland was enlarged, and the border of clivus was irregular. Pituitary and thyroid hormone levels were normal. He underwent bilateral lateral tarsal strip (LTS) procedure to address the eyelid laxity. Histopathologic examination revealed marked sebaceous gland hyperplasia with mucin deposition in the dermis.
Conclusion: Floppy eyelid syndrome, clubbing, and acromegaloid face are main features that could lead to the diagnosis of PDP.

Keywords: Pachydermoperiostosis; Clubbing; Acromegaloid face; Floppy eyelid syndrome

Introduction

Pachydermoperiostosis (PDP) also known as primary hypertrophic osteoarthropathy is a rare genetic disease characterized by digital clubbing, soft tissue hyperplasia, and periostosis.[1] The facial skin may be noted to be coarse and thickened and have specific furrows. These changes may also appear on the skin of the forehead and scalp. Hyperplasia of the sebaceous glands may cause the facial skin to appear oily. The ocular manifestations of PDP may include blepharoptosis severe enough to obstruct vision, floppy eyelid syndrome and ocular discomfort due to hypertrophy of eyelid and palpebral conjunctiva.[2,3] Herein, we describe the rare occurrence of blepharoptosis and floppy eyelid syndrome in a patient with PDP and its surgical outcomes.

Case report

A 32-year-old man was presented with a long-term history of swelling, drooping, and redness of both upper eyelids. Past medical history was significant for a facial reconstructive surgery in the forehead region 8 years ago. Cutis verticis gyrate, broad and thickened fingers and toes with digital clubbing and excessive sebaceous secretions were noted on physical exam. The patient was noted to have acromegaloid face and bilateral blepharoptosis. Ophthalmic examination showed that uncorrected visual acuity of both eyes was 20/30 with pinhole. The eyelids were thickened and markedly floppy. The lower eyelid was found to be slightly ectropic. Eyelid eversion

Conflicts of interest and source of funding: None. Authors obtained informed consent from the patient to publish the photoes.
* Corresponding author. Eye Research Center, Farabi Eye Hospital, Tehran University of Medical Sciences, Tehran, Iran.
E-mail address: Soleimani_md@yahoo.com (M. Soleimani).
Peer review under responsibility of the Iranian Society of Ophthalmology.

https://doi.org/10.1016/j.joco.2019.03.001

revealed papillary reaction on tarsal conjunctivae. Mild punctate epithelial erosions were noted on the inferior region of the cornea (Fig. 1A–E.) The remainder of the ophthalmologic exam was normal. The patient was diagnosed with PDP, a rare genetic disorder characterized by pachyderma, periostosis, and digital clubbing. The patient underwent eyelid tightening procedure with lateral tarsal strip (LTS) (Fig. 2A–D). On the brain MRI, the border of clivus was irregular, and the pituitary gland was enlarged. However, pituitary and thyroid hormone levels were normal. Radiologic investigation of the feet and hands revealed cortical thickening of metacarpal, metatarsal, and phalangeal bones, with soft tissue swelling. A biopsy was obtained from the eyelids and was sent to laboratory for histologic exam. Histopathologic findings showed mild acanthosis with normal granular layer, sebaceous gland hyperplasia, and few dilated pilosebaceous ducts, dermal edema mostly in the upper dermis and mucin deposition in the dermis (Fig. 3A–D). The study adhered to the tenets of the Declaration of Helsinki.

Discussion

The first case of PDP was reported in 1868 by Friedreisch.[1] Touraine, Solente, and Gole were the first who postulated that PDP was a distinct entity from acromegaly and hypertrophic osteoarthropathy secondary to thoracic abdominal neoplasia or chronic pulmonary disease.[1–3] The facial skin becomes coarse with specific furrows. The furrows may also involve the scalp, where it is known as cutis verticis gyrate. Most affected patients are male, with a male/female ratio of 9:1.[1,2] The disease has a clear genetic predisposition, and about one third of patients have a close relative with similar digital deformity. However, the pattern of inheritance has not yet been fully recognized, and both autosomal recessive and autosomal dominant inheritance forms have been proposed.[2,3] Digital clubbing is the most frequent finding in this disease. This symptom is caused by soft tissue hyperplasia and may be present at birth or appear during adolescence. The etiology of PDP still remains unknown. Mutations in highly graphitic polycrystalline diamond gene (HGPD) encoding 15-hydroxyprostaglandin dehydrogenase (15-PGDH) might be responsible for the pathogenesis. The enzyme15-PDGH is important for prostaglandin degradation, and increased levels of prostaglandins, especially prostaglandin E2 (PGE2), have been found in patients with PDP.[3–5] Mutations in solute carrier organic anion transporter family member 2A1 (SLCO2A1) are also associated with increased level of PGE2. Mutations in HGPD gene are equally observed in male and

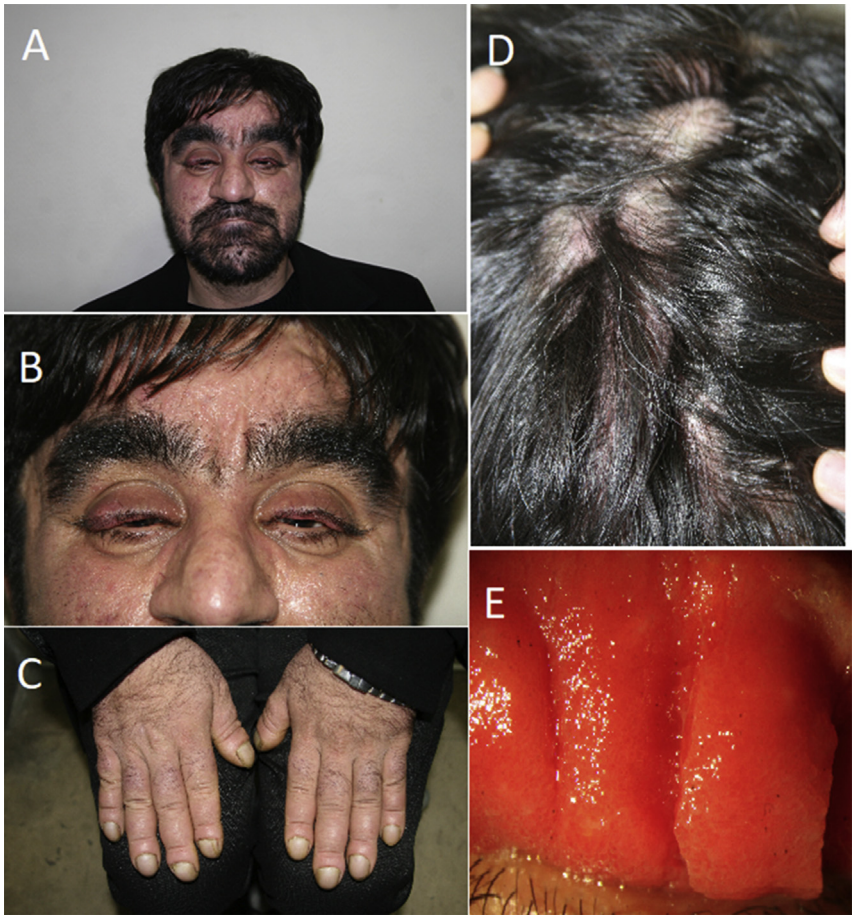

Fig. 1. (A) Clinical photograph of patient on presentation showing acromegaloid face, bilateral blepharoptosis and pachydermia, (B) He was noted to have bilateral hypertrophic eyelids with marked blepharoptosis, (C) Clinical photograph showing hypertrophic hands with clubbing of fingers, (D) Cutis verticis gyrate, (E) The eyelids were markedly hypertrophic with papillary reaction on palpebral conjunctiva.

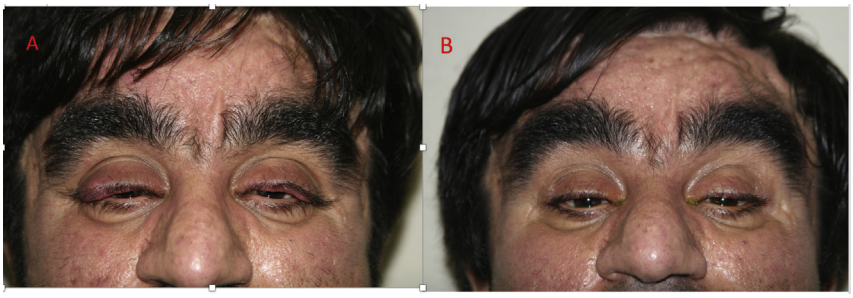

Fig. 2. Preoperative photograph of the patient (A) and postoperative photograph (B) after he was undergone bilateral lateral tarsal strip (LTS).

female patients, but SLCO2A1 gene defects are more common in males.[5,6]

Berdia and colleagues reported the association of a non-secreting pituitary macro-adenoma in a patient with PDP.[7] Pituitary gland was noted to be enlarged in our patient; however, no adenoma was identified on the brain MRI. Patients with PDP often complain of ocular discomfort and irritation due to tear film abnormalities and floppy eyelid syndrome. These symptoms can be alleviated with lubricating drops. Ptosis usually caused by eyelid thickening results in mechanical ptosis. On the other hand, it may be rarely manifested as floppy eyelid syndrome.[8–10] When eyelid laxity and blepharoptosis are noted on physical exam, an eyelid tightening procedure with blepharoptosis repair can be considered. Davidson et al. suggested that excision of an ellipse of upper eyelid skin can correct both the horizontal and vertical dimensions of eyelids.[8] Unilateral tarsectomy and wedge resection coupled by a mirror sequential procedure on the contralateral side have been performed to

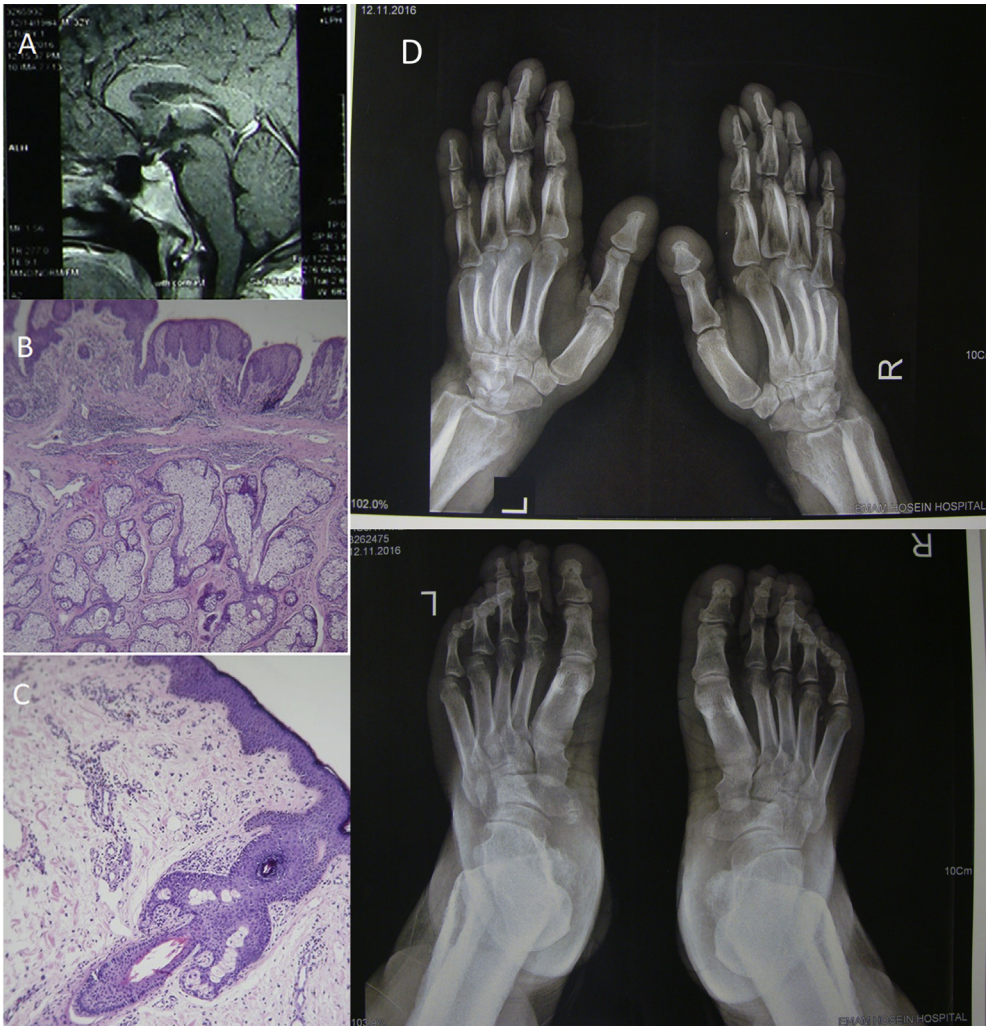

Fig. 3. (A) T1 weighted sagittal MRI of brain showing enlarged pituitary gland, (B) Histopathologic examination of eyelid demonstrating sebaceous gland hyperplasia and diffuse fibrosis around pilosebaceous units, (C) Histopathology specimen of eyelid biopsy showing edema in upper dermis, (D) Cortical thickening of metacarpal, metatarsal and phalangeal bones was also shown.

address the eyelid laxity in a case of PDP. Bleyen described using bilateral upper eyelid tarsal strip combined with external levator advancement to correct both the blepharoptosis and eyelid laxity in a patient diagnosed with PDP.[9] We performed bilateral upper eyelid LTS to address the eyelid laxity. This procedure was associated with relief of symptoms and improved eyelid contour. In conclusion, we reported a clinicopathological study on a unique case of PDP that also showed pituitary involvement in MRI, which had been described only in one case in the literature.[7] Interestingly, all of the typical findings were present in this patient.

References

1. Arinci A, Tümerdem B, Karan MA, Erten N, BüyükbabanI N. Ptosis caused by pachydermoperiostosis. *Ann Plast Surg*. 2002;49(3):322–325.
2. Doshi D. Touraine-Solente-Gole syndrome. *Orbit*. 2018;37(2):97–101.
3. Uppal S, Diggle CP, Carr IM, et al. Mutations in 15-hydroxyprostaglandin dehydrogenase cause primary hypertrophic osteoarthropathy. *Nat Genet*. 2008;40(6):789–793.
4. Tanese K, Niizeki H, Seki A, et al. Pathological characterization of pachydermia in pachydermoperiostosis. *J Dermatol*. 2015;42(7):710–714.
5. Ma W, Guo S, Li Y, Li Z. Pachydermoperiostosis of the complete type: a novel missense mutation c. 101T> C in the SLCO2A1 gene. *Eur J Med Genet*. 2017;60(8):433–436.
6. Hou Y, Lin Y, Qi X, et al. Identification of mutations in the prostaglandin transporter gene SLCO2A1 and phenotypic comparison between two subtypes of primary hypertrophic osteoarthropathy (PHO): a single-center study. *Bone*. 2018;106:96–102.
7. Berdia J, Tsai FF, Liang J, Shinder R. Pachydermoperiostosis: A rare cause of marked blepharoptosis and floppy eyelid syndrome. *Orbit*. 2013;32(4):266–269.
8. Davidson S, Smith J. Pachydermo-periostosis: a rare cause of ptosis. *Trans Ophthalmol Soc U K*. 1969;90:539–550.
9. Bleyen I, White VA, Dolman PJ. Floppy eyelid syndrome and ptosis in a patient with pachydermoperiostosis. *Ophthalmic Plast Reconstr Surg*. 2010;26(4):293–295.
10. Mukherjee B, Alam MS. A rare case of pachydermoperiostosis associated with blepharoptosis and floppy eyelids. *Indian J Ophthalmol*. 2016;64(12):938–940.