Skin picking: the overlooked cutaneous manifestation of Prader-Willi syndrome

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To the Editor:

Prader-Willi syndrome is known as the most common syndromic form of obesity. This genetic disorder is characterized by the absence of normally active paternally expressed genes located on the long arm of chromosome 15. Most cases occur sporadically and are caused either by deletions from the paternal chromosome or maternal disomy [1]. The prevalence rate is estimated to be between 1 in 16,000 to 1 in 25,000 and both genders are affected equally [2].

We report on a 28-year-old woman, Fitzpatrick phototype III, with a known diagnosis of Prader-Willi syndrome and a 10-year history of recurrent skin lesions, referred to our dermatology department for evaluation. She didn't have any other known conditions and was taking no medication. We observed several excoriations across the face, trunk, back, and upper extremities (**Figure 1**). Deeper lesions with complete loss of the epidermis were evident across the lower portion of the abdomen, right wrist, right shoulder, and right malar region. On the back they were located on the lower thoracic region, were smaller, and had overlying crust. No exudate, necrotic tissue or signs of infection were noted. The patient didn't have pruritus, pain, or any other skin-related complaint. Physical examination was also remarkable for other distinctive Prader-Willi features such as severe obesity, small hands and feet, and short stature. Although firmly denied by the patient, her caregiver reported a long-standing relapsing and remitting skin-picking behavior which was compatible with the dermatologic presentation and with our most likely hypothesis. The patient and caregiver were reassured that no primary dermatologic disease was present and follow-up by a behavioral disorder specialist was advised.

Prader-Willi syndrome is a genetic disorder attributed to genomic imprinting, an epigenetic phenomenon in which the expression of a gene depends on whether it is inherited from the mother or the father. Most cases, 50 to 75% are caused by loss from the paternal chromosome of an imprinted

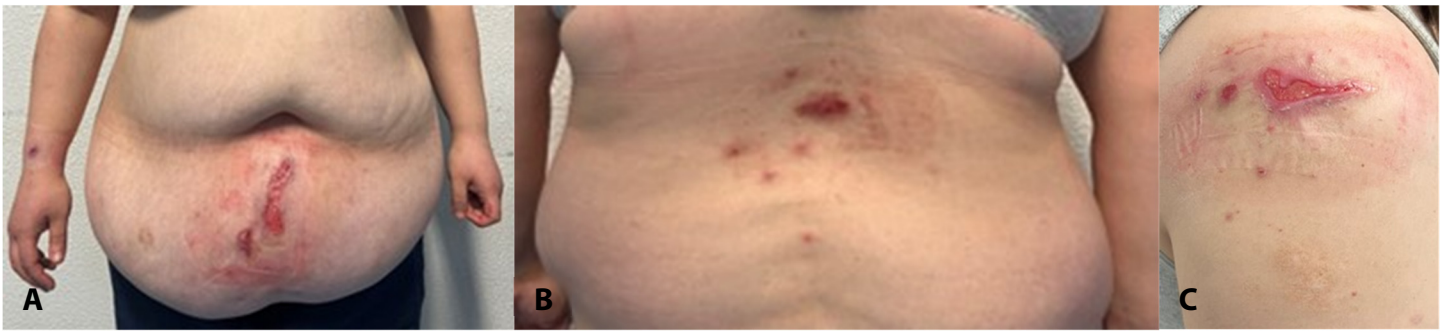

Figure 1. *Skin ulcers caused by severe skin picking behavior in a female patient with Prader-Willi syndrome on the **A)** abdomen, **B)** back, and **C)** right shoulder.*

locus mapping to 15q11-13. Maternal uniparental disomy is increasingly recognized, representing 20 to 50% of cases, a phenomenon that is believed to be attributed to advancing maternal age, and identification with the availability of newer molecular diagnosis technologies. Interestingly, a different genetic disease with a distinct phenotype, Angelman syndrome, occurs in the setting of a deletion of 15q11-13 from the maternal chromosome [3].

Although severe obesity caused by uncontrollable appetite and hyperphagia as well as small hands and feet are prevalent and widely recognizable manifestations of Prader-Willi syndrome, the full clinical picture is complex and varies from patient-to-patient and across life stages. Neonatal hypotonia, lethargy, poor feeding, and failure to thrive are often the first clues that alert parents and health care professionals. As children grow, they start to exhibit behavior problems, difficulties with social interaction, and intellectual disability. Hyperphagia leading to obesity starts around three years of age. In adolescence, secondary sexual characteristics are usually delayed or incomplete due to hypogonadism, with menarche occurring as late as age 30. Although life expectancy is improving due to better access to healthcare, survival after the sixth decade of life is uncommon with most deaths in adults being related to obesity and its cardiovascular complications [4].

Prader-Willi patients exhibit certain behavioral characteristics such as skin picking which occurs in 64-78% of cases. Skin picking, also known dermatillomania has important consequences that are both physical and psychological such as skin infection, scarring, depression, and feelings of guilt. Researchers looking at the phenomenology of skin picking report that most Prader-Willi patients pick at skin with a previous lesion such as a scar or a nevus, usually show no signs of pain while picking, and are not always consciously aware of the behavior [5].

Management approaches mainly rely on behavioral therapy, although a recent pilot study showed promising results with N-acetylcysteine which may act by modulating the excitatory neurotransmitter glutamate, believed to be dysregulated in obsessive compulsive behaviors [6].

Although not a rare condition according to the published epidemiologic data, Prader-Willi syndrome may be underdiagnosed and underreported especially among low socioeconomic populations with limited access to healthcare. Because of feelings of guilt and fear of judgement, patients and their family members often feel reluctant to seek medical care concerning the obesity and overeating behavior. Therefore, health care professionals outside the fields of behavioral science, genetics, and nutrition, should be aware of the typical phenotype and its clinical manifestations to detect and refer possible undiagnosed cases to the appropriate provider. There are scant reports of Prader-Willi patients being evaluated by dermatologists, and this case serves as a reminder about the main cutaneous manifestation of this syndrome.

Potential conflicts of interest

The authors declare no conflicts of interest.

References

1. Cassidy SB, Driscoll DJ. Prader-Willi syndrome. *Eur J Hum Genet*. 2009;17:3-13. [PMID: 18781185].
2. Burd L, Vesely B, Martsolf J, Kerbeshian J. Prevalence study of Prader-Willi syndrome in North Dakota. *Am J Med Genet*. 1990;37:97-9. [PMID: 2240051].
3. Kalsner L, Chamberlain SJ. Prader-Willi, Angelman, and 15q11-q13 Duplication Syndromes. *Pediatr Clin North Am*. 2015;62:587-606. [PMID: 26022164].
4. Einfeld SL, Kavanagh SJ, Smith A, et al. Mortality in Prader-Willi syndrome. *Am J Ment Retard*. 2006;111:193-8. [PMID: 16597186].
5. Bull LE, Oliver C, Woodcock KA. Skin Picking in People with Prader-Willi Syndrome: Phenomenology and Management. *J Autism Dev Disord*. 2021;51:286-297. [PMID: 32495267].
6. Wieting J, Deest M, Bleich S, Frieling H, Eberlein C. N-Acetylcysteine provides limited efficacy as treatment option for skin picking in Prader-Willi syndrome. *Am J Med Genet A*. 2022;188:828-835. [PMID: 34854203].