

The early report of herpetic whitlow by Bahā' al-Dawlah Razi in 15th Century CE

Samaneh Soleymani¹, Narges Tajik², Mehrdad Karimi³, Arman Zargaran^{1,2}

¹Department of Traditional Pharmacy, School of Persian Medicine, Tehran University of Medical Sciences, Tehran, Iran;

²Department of History of Medicine, School of Persian Medicine, Tehran University of Medical Sciences, Tehran, Iran;

³Department of Traditional Medicine, School of Persian Medicine, Tehran University of Medical Sciences, Tehran, Iran

SUMMARY

A herpetic whitlow is a lesion (whitlow) on a finger or thumb caused by herpes simplex virus. It is a painful infection that typically affects the fingers or thumbs. Occasionally infection occurs on the toes or on the nail cuticle. Symptoms of herpetic whitlow include tenderness, swelling and reddening of the infected finger skin, fever and swollen lymph nodes. Although, it is believed that the first recorded observations were in 1909 CE by H. G. Adamson, in the medieval period, Bahā' al-Dawlah Nūrbakhshī Razi (1501 CE) described herpetic whitlow, under the title of *Dā'khes* in *Khulāsāt*

al-Tajārib (The Summary of Experience), his book on medicine. Some of Bahā' al-Dawlah's descriptions and his etiology of *Dā'khes* are based on humoral theories and cannot be concurred with current medical concepts, but more symptoms and clinical manifestations are consistent with current definitions. It seems the earliest description of herpetic whitlow in the medical history.

Keywords: Persian medicine, nail disorder, dermatology, hand infection, history of medicine.

INTRODUCTION

Herpetic whitlow is a painful cutaneous infection that affects any anatomical region of the hand, in particular terminal phalanx of the thumb, index, or long finger near the nail [1, 2]. It is caused by Herpes Simplex Virus (HSV) types 1 or 2. The HSV-1 and HSV-2 have little serologic variances and their lesions are clinically indiscernible [3]. Whitlow is derived from *whitchflaw*, the Scandinavian word that refers to the sensitive area around the nail- and *flaw* means crack [4]. Herpetic whitlow lesions occur most usually on the pulp of the finger, although paronychia regions and sides of the finger can also be involved [3, 5]. Lesions are accompanied with intense throbbing pain [1]. The prodrome is followed by erythema, edema tenderness, pruritus, burning, and tingling

of the affected finger or the entire [6]. Regional lymphadenopathy, lymphadenitis and fever can also occur, and the vesicles can become purulent. The infection can lead to nail loss, nail dystrophy and scarring, if left untreated [7, 8]. It is believed that herpetic whitlow was initially reported by H.G. Adamson in 1909 [9, 10]. Although herpetic whitlow is a new concept in medical sciences, by researching historical documents, it is described as "*Dā'khes*" by Bahā' al-Dawlah Nūrbakhshī Razi (15th century CE), a Persian physician in the Safavid era. This study has attempted to introduce historical roots of this disease in Persian medicine in medieval era.

Persian medicine

The Persian medicine's history is divided into two main parts: the ancient era before Islam (inception of history to 637 CE) and the Islamic period [11]. It seems that Persian scientists began humourism which then became a universal context of medicine in ancient and medieval ages [12].

Corresponding author

Arman Zargaran

E-mail: zargarana@sums.ac.ir

The paradigm of humourism was a holistic view on the body based on four temperaments (*Mizaj*) including blood (*dam*), phlegm (*balgham*), yellow bile (*saфра*) and black bile (*soda*). In medieval times, medical science progressed and flourished by Persian scientists like Rhazes (865-925 CE), Haly Abbas (949-982 CE), Avicenna (980-1037 CE), Jorjani (1042-1137 CE) and others during the 9th to 13th century CE [13]. Some of these scientists' manuscripts such as Avicenna's *The Canon of Medicine* have been taught in the west and the east as medical reference books until 16th century [14].

Bahā' al-Dawlah Nūrbakhshī Razi

Bahā' al-Dawlah Nūrbakhshī Razi was an influential Persian physician who was born in the village of Tarasht, in the vicinity of the city of Rey (near contemporary Tehran, Iran) in the late 15th century CE [15]. He made a great contribution to medicine by many innovations and findings such as presenting the first report of epidemic pertussis treatment methods of syphilis (*Atashak*) and generating ideas about the method of smallpox vaccination [15-18]. According to many historians, he was one of the most well-known Persian scholars of the Safavid Era [19]. Safavid Kingdom (1501-1722 CE) was the most significant dynasties at the beginning of the modern history of Iran. In this era, there was progress in several fields including architecture, art, economics, pharmacy and medicine [11].

Khulāsāt al-Tajārib (The Summary of Experience)

In ca. 1501 CE, Bahā' al-Dawlah wrote a medical treatise, namely *Khulāsāt al-Tajārib* (The Summary of Experience), in Persian language which contains 28 chapters [16, 19]. It is the only book remained from Bahā' al-Dawlah Nūrbakhshī Razi [16]. The first five chapters of this manuscript are principally concerned with regimen and hygiene that are the two principal aspects of medicine. Various types of fever are discussed in the sixth chapter. Seventh to twenty-fifth chapters unfold the treatment of various diseases. The twenty-sixth chapter of this book focused on poisonous bites, toxins and antidotes. In the final two chapters, compound remedies and pharmacology are described [17].

Dā'khes - herpetic whitlow in Khulā at al-Tajārib

He described a dermatologic disorder on nails as "Dā'khes" or "gooshak" disease in the fourth chap-

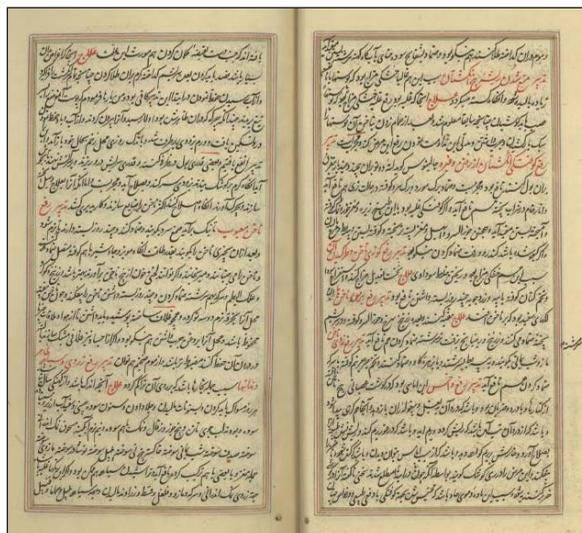


Figure 1 - The Pages of the Book of "Khulāsāt al-Tajārib" (A Summary of Experiences in Medicine) on Dā'khes (herpetic whitlow); written by Bahā' al-Dawlah Nūrbakhshī Razi in 1501 CE.

ter of *Khulā at al-Tajārib* (Figure 1), and defined *Dā'khes* as a swelling occurring on the nerve-rich tissue of the nail root (*goosht asabani*) which is accompanied by pain and throb, which may be followed by fever and might also lead to the development of suppurative infection in the region of hand. Sometimes itching and irritation on the skin surface indicates pus in the lesion depth. Pain and infection may also spread to the axillary and groin and cause swelling and node there and sometimes the lesions are removed causing the nail loss [18]. The cause of illness from the point of view of Bahā' al-Dawlah is the retention of crude humors blood (with hot and wet qualities) due to bruising, based on humoral theories as well as archery because of frequent contact of nails with bowstring [18].

Although some of Bahā' al-Dawlah explanations for the etiology of Dā'khes is based on humoral theories and cannot be described using current medical concepts, most of his definitions and symptomatic descriptions are nearly identical to modern explanations of herpetic whitlow.

■ CONCLUSIONS

By comparing this historical definition with current definitions of herpetic whitlow, it seems that

both are the same disease. Therefore, Bahā' al-Dawlah Nūrbakhshī Razi could be considered as a scientist who contributed to define herpetic whitlow more than 400 years before that the current definition.

Conflict of interest

None.

Funding

None

REFERENCES

- [1] Stern H, Elek SD, Millar DM, Anderson HF. Herpetic whitlow: a form of cross-infection in hospitals. *Lancet*. 1959; 2 (7108), 871-4.
- [2] Gill MJ, Arlette J, Buchan KA. Herpes simplex virus infection of the hand. *J Am Acad Dermatol*. 1990; 22 (1), 111-6.
- [3] Fowler JR. Viral infections. *Hand Clin*. 1989; 5 (4), 613-22.
- [4] Egan LJ, Bylander JM, Agerter DC, et al. Herpetic whitlow of the toe: an unusual manifestation of infection with herpes simplex virus type 2. *Clin Infect Dis*. 1998; 26 (1), 196-7.
- [5] Jameson JL, Fauci AS, Kasper DL, Hauser SL, Longo DL, Loscalzo J. Harrison's Principles of Internal Medicine 2015, pp 340-343. McGraw-Hill Education, New York.
- [6] Clark DC. Common acute hand infections. *Am Fam Physician*. 2003; 68 (11), 2167-76.
- [7] Bowling JC, Saha M, Bunker CB. Herpetic whitlow: a forgotten diagnosis. *Clin Exp Dermatol*. 2005; 30 (5), 609-10.
- [8] Laskin OL. Acyclovir and suppression of frequently recurring herpetic whitlow. *Ann Intern Med*. 1985; 102 (4), 494-5.
- [9] Adamson HG. Herpes febrilis attacking the fingers. *Br J Dermatol*. 1909; 21, 323-4.
- [10] Wu IB, Schwartz RA. Herpetic whitlow. *Pediatr Dermatol*. 2007; 79 (3), 193-6.
- [11] Soleymani S, Zargarani AA. Historical report on preparing sustained release dosage forms for addicts in medieval Persia, 16th Century AD. *Subst use misuse*. 2018; 53 (10), 1726-9.
- [12] Zargarani A. Ancient Persian medical views on the heart and blood in the Sassanid era (224-637 AD). *Int J Cardiol*. 2014; 72 (2), 307-12.
- [13] Soleymani S, Zargarani A. From food to drug: Avicenna's perspective, a brief review. *Res J Pharmacogn*. 2018; 5 (2), 65-9.
- [14] Soleymani S., Zargarani A. Kohl: an ophthalmic dosage form in Persian medicine, 1555 to 1853. *Pharm Hist*. 2018; 48 (2), 43-7.
- [15] Tadjbakhsh H. History of veterinary medicine and medicine of Iran 2006. Tehran University Press, Tehran.
- [16] Yarmohammadi H, Bahmani Kazeruni MH, Soofi A, Zargarani A. The first report of epidemic pertussis by Bahaodowle Razi from the 15th century Anno Domini. *Iran Red Crescent Med J*. 2015; 17 (7), 13454.
- [17] Razi Nourbakhshi B. *Kholasat al-Tajarob* (The Summary of Experience) 2009. Edited by Shams Ardekani MR et al. Sahba Danesh Publication, Tehran.
- [18] Elgood C. Medical history of Persia and the Eastern Caliphate lands 2007. Amir Kabir Publications, Tehran.
- [19] Golzari SE, Dalfardi B, Yarmohammadi H, Heydari M. Bahā' al-Dawlah Razi (d. 1508 AD) and an early clinical description of supraventricular tachycardia. *Int J Cardiol*. 2014; 175 (2), 25-6.