REVIEW ARTICLE

Psoriasis as old as mankind: A Review

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ABSTRACT

While evaluating historical aspects of medicine, Greco-Arabic period stands ahead in medical field, before the skills of the 20th century. Their great contributions to medicine by their efforts drew remedies from all across the world. Psoriasis, a skin disorder, most likely as old as mankind is mentioned in the vast classical literature. This review paper mainly highlights the contribution of physicians of Greco-Arab related with psoriasis. Their scientific observation about the disease, gave a brief description about etiopathogenesis, clinical presentation and management of the diseases. Present physicians may not be well aware of the richness of the medical literature about psoriasis. This review gathered a rich source of medical information about the history of psoriasis from the wealth of ancient literature.

Keywords: Tagashshur al-Jild, Psoriasis, Historical Background, Greco-Arab medicine

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INTRODUCTION

Psoriasis is an inflammatory and proliferative condition of skin (1), 2-3% of the worldwide population are affected by this condition (2,3). Among them 25% are expected to have moderate-to severe disease (4). This disease is associated with increased risk of certain concomitant diseases like arthritis, cardiovascular disorders and inflammatory bowel diseases etc (5,6,7) and has tremendous impact on psychological, social and economical aspect of life of the patient (8,9,10). It is a typically lifelong condition, which is not having a permanent cure (11). It is believed from centuries that development which occurs in the field of medicine is mixed contribution of the Greeks, and secondly of the Western modern civilization. It is impossible for the West to give description of diseases without mentioning the marvellous development in medical field during Greco-Arabic civilization (12). The main motive behind this review paper is to assemble the historical aspect of psoriasis from Greek medical era to the modern medical age in chronological order and effort will be made to explain briefly the historical description of diseases related to its every aspect during the golden ages of Greco-Arabic medicine up to the present situation.

ANCIENT HISTORICAL BACKGROUND OF PSORIASIS

The time period in which scientists have found the original remnants of human activity around 60,000

BC to 650 AD refers to the Ancient history. In this world there was much confusion between different dermatological diseases having same clinical features. Most of the terminology used for diseases and symptom were contradictory. Psoriasis is one of the oldest known conditions in medical history but it is very difficult to trace out it as separate entity from ancient classical literature when psoriasis, leprosy and other inflammatory skin disorders were thought to be the same condition (13). Its history was intertwined with other devastating conditions, similar in appearance and beset with physical, mental and social stigma (14). Ancient literature, especially, Cuneiform tablets, Egyptian papyri, The Bible and classical texts contains many references related to skin disorders and its treatment (15).

The Cuneiform tablets (3500-300 BC) developed by Sumarians of Mesopotamia is a rich source of medical information free from magical or religious content, it works as archive for practising doctors to refers skin problems and gives practical treatment advice. In these tablets Mesopotamian physicians mentioned skin diseases by a term called "Asu" but not have any description about psoriasis (15,16,17). The two largest Papyri, the Ebers Medical Papyrus (1552-1350 BC) and Smith Papyri (1500 BC), are the oldest and most important medical papyri of ancient Egypt with respect to the field of dermatology (18). Ebers Medical Papyrus cites various skin disorders and enclose several suggestions related to treatment, but there is no clear-cut explanation of leprosy and psoriasis in the Papyri (15). A doctoral thesis published by Andersen also signifies that certain swelling mentioned in the Ebers Papyrus does not refer leprosy but rather to a usual defilement of the scaly human skin (19). The term "šuft" was used for scales, but it was impossible to recognise it as psoriasis (16,17). Old Testament particularly The Bible is full of many references related to skin diseases. The term *Tsara'at* (*Zara ath*) mentioned in *Leviticus Xii* is frequently designed for all skin diseases. While analysing case histories mentioned in *Leviticus Xii*, the term *Tsara'at* not only includes various un-contagious skin conditions like leprosy, psoriasis and virtiligo but also certain chronic, mutilating and contagious skin lesions with which they may be well confused. The exact meaning of this term is not known but it is considered as punishment given by god as reward of sin. (14,16,17,20).

The Ayurvedic medicine developed in India during antiquity. The manuscript about psoriasis was found by different names with same clinical features in the tradition of the Vedas from India. The first ever historical material about skin and its diseases are available in Rig-Vada the earliest text of Indo-Iranian Aryans during the period of 14th century BC (21). The Charaka Samitha (6th-2nd century BC) a Sanskrit text on Ayurveda medicine has great importance. In this book all skin diseases have been described under the general term "Kushtha". It is clearly mentioned in the book that "All types of Kustha are caused by the three doshas together. Doshas, according to Ayurveda medicine are three fundamental bodily substance (tissues) viz Vata, Pitta and Kaffa. These doshas get badly affected which in turn effect Twacha (Skin particularly face), Rakta Dhatu (Blood), Mamsa Dhatu (Muscle tissue) and Ambu (water portion in the body), and create Kushtha (22). In Sushruta Samhita, (6th century BC) Kushtha Roga is categorised into two groups, Mahakushtha (Major Skin disorders) and Kshudrakushtha (Minor skin disorders) which are again classified into seven and eleven types respectively. It further states that due to Mithyaahara (Incompatible diet), Vihara (Incompatible Lifestyle) and Karma (One's deeds), tridoshas (three tissues) get affected thus effecting the Twak (Skin), Rakta (Blood), Mamsa (Muscles) and ambu and thus it produces Kustha (23). Also they consider psoriasis is a type of Kushta and it is related to various varieties of "Kshudra Kushtha" Among them "Ekushtha" and "Kitibhakushtha" are the commonest due to resemblances in signs and symptoms with that of psoriasis (24).

Ancient medical period mainly Greek and Roman medicine is considered as main source of the origin of modern medicine. Medical textbooks of medieval period were based on theories and philosophy of nature mentioned in Hippocratic (460–370 BC), Herophilos (330–255 BC), Erasistratus (305–250 BC), and others. In old literature, Psoriasis and leprosy shares much of its ancient history with elephantiasis (15). Disease normally identified as leprosy in the classical medical literature is elephantiasis, but this term sometimes may also have been used less specifically to describe a number of other serious disfiguring skin complaints, such as psoriasis (25). The father of medicine Hippocrates 460-377BC (*Buqrat*)

and his school provided objective and meticulous descriptions of many skin disorders. In his collection of medical dissertation known as Hippocraticum corpus (26), he described that skin diseases result from distemper of the four humours (27). According to Unani System of Medicine human body contains four humours viz Dam (blood), Balgham (phlegm), Safra (yellow bile) and Sauda (black bile), a concept given by Hippocrates. He gave first description of psoriasis by using the term 'lepra' and explained it as a 'scaly' ailment, easy to treat and occurs frequently in spring. According to his description about the disease present authors are sure that lepra is not leprosy; but it could be guttate psoriasis, eczema or pityriasis rosea. He also mentioned term 'psora' and used it for 'the itch' or scabies, but not for psoriasis (28). Further he classified the diseases and assembled the dry and scaly eruptions together under the heading "lopoi" (epidermis) and this group probably included psoriasis and leprosy (16,29-31) as well as recommended tar and topical arsenic as treatment for psoriasis. He also described skin condition following a sore throat, probably it was the first description of guttate psoriasis (26, 27).

1st century AD from Roman civilization great personality Aulus Cornelius Celsus (25 BC-45 AD), provided a book named as "De Medicina" in which he concentrated on skin diseases and described many favus (fungus), varus (acne), porrigo (dandruff), thymia (common warts) and two diseases of scalp: alope 'ja (a rea Celei) and ophiasis in the 5th and 6th chapters. (16,28). He used term impetigo for scaly lesion on skin of extremities and nails instead of term psoriasis (14,32,33). He stated that "it is counted among chronic infections; and in such conditions whole body becomes so affected that even bones are said to become diseased. The surface of the body presents with multiple spots and swellings which at first is red and gradually changed to black. The skin is thickened and thinned in an irregular ways, hardened, softened and roughened in some places with a kind of scales; the trunk wastes, the face, calves and feet swell. When the disease is long standing, the fingers and toes are sunk under the swelling" (25). Scabies remains as generic term used to indicate various forms of eczema or psoriasis, itchy dermatosis in Celsus (34).

Greek physician *Rofas* (Rufas of Ephesus, 98-171AD) described a diseases named as elephantiasis, which seems very likely modern lapromatous leprosy but not psoriasis (35). He also described a condition similar to nail psoriasis as "Talaq" in which, white scales appear over the affected part of skin resembling *Abrak* (36). *Jalinoos* (Galen, 133AD-200AD) having origin from Greek but works as physician, philosopher and surgeon in the Roman Empire and developed an ingenious metaphysical theory of disease, which was based on the pathological humours of Hippocrates and combined with the theory of the four elements-earths,

air, fire, and water. He thus offered a ready explanation for all pathological processes and supplied a working theory for treatment. He first identified the psoriasis as health condition of the skin and termed it as 'psora' a Greek word which means desquamative condition, and described it as a disorder of skin characterized by shedding of scales form eyelids, corners of the eyes and scrotum. He also mentioned that the condition was pruritic and excoriations were present (14,16,30). This affliction was probably a type of eczema or seboric dermatitis. He continued to recommend treatments of arsenic and boiled viper for patients (16, 31).

CONCEPT OF PSORIASIS IN GRECO-ARAB MEDICINE

Traditional Greco-Arab medical period lasted from the 7th - 5th century and this medicine is practiced within the Mediterranean as well as in most Islamic countries (37). The Islamic world kept the torch of medical knowledge alight and brightened it with new thoughts (38). The confusion between psoriasis and other diseases especially leprosy continued for several centuries from the medieval period up to 19th century but some eminent Greco Arabic scholars described the disease under the caption of 'Tagashshur-al-Jild' which is appropriate for it and others described the similar clinical features as present in psoriasis under the caption of 'Bars Aswad', 'Quba Muqasshira' and 'Da'ulhaiah' They considered it as a disease which results due to the derangement of body fluid mainly khilt sauda (black bile) associated with weakness of skin. Concept of Tagashshur-al-Jild (psoriasis) cited by Greco Arab physicians in their manuscript are as follow:

Abu al-Hasan Ali ibn Sahal Rabban al-Tabri (770-850 AD) in his book Firdouse al-Hikmah (Paradise of Wisdom) described treatment for the condition of peeling of skin, rather indirectly dealt with management of psoriasis, where he recommended the use of Unani drugs like kibreet, shibb-i- yamani and sausan (39). Al-Sabi Thabit ibn Qurrah al-Harrani (Thebit, 836-901 AD) in his book Zakheera Sabit Ibn Qurrah described the disease Da'ulhaiah, which has same clinical features as in scalp psoriasis. He defined it as a condition in which shedding of hairs associated with shedding of skin occurs; and reffered its etiology to the sauda muthariga and balgam maleh (40). Zakariyya al-Razi (Rhazes, 850-923 AD) in his book Kitab-al Hawi Fi-I-Tibb (Liber Continens), Kitab-ul Fakhir Fit Tib and Kitab-al Mansoori describe the diseases Bars Aswad and Da'ulhaiah instead of Tagashshur-al-Jild but both diseases have same features. He described Bars Aswad is a disease having characteristics like itching, peeling off round scales, surface irritation, and pustules which spread extensively on body and occurs due to ihtirage balgum (burning of peghlm) and sauda (black bile) (41). Further he described Da'ulhaiah is a condition in which shedding of hairs is associated with shedding of skin, and occurs due to khareef haad madda. For treatment he recommended istifragh (elimination of morbid material), hammam (steam bath), local application of oils and resolvents (42). He also advised to apply root of hummaz with sirka as zimad on Tagashshur-al-Azfar (nail psoriasis), and apply tukhm katan, hurf and shahed as paste for removing scaling of nails (42,43). Ahmad ibn Mohammad al-Tabri (980 AD) in his book Kitab al-Moalaja al-Buqratiya (Hippocratic treatments) described nomenclature of the disease based on the shedding of scales from whole body including eye brows, eye lashes and mucus membrane of mouth as same as in snake. He named it as Tagashshur-al Jild if disease occurs in whole body and Da'ulhaiah if it occurs in scalp and he mentioned that both conditions result from akhlat harrifah, lazzaah and yabis (pungent, irritant and dry humours) and are associated with itching. He prescribed istifragh (evacuation of morbid material), tabreed (Production of fluids inside the body), fasd (venisection), hammam (steem bath), local application of oils and alteration in diet for treating the disease (36). Ali ibn al-Majusi (Haly Abbas - 930-994 AD) in his book Kitab Kamil us-Sina at-tibbiya (the Complete Art of Medicine) described the concept of etiopathogensis of Tagashshur-al- Jild as it results when blood mixes with balgham shor marari. He explained that Tabiat (physic) expels this madda (unwanted material) towards skin from internal organs in order to remove it from body, but, it remains underneath the skin and causes itching and scaling, and severity of disease depends upon the latafat and ghilzat of morbid materials (44). Abu Ali Abdula Ibn Sina (Avicenna, 980-1107 AD) in his book Al-Qanoon (the Canon of medicine) gave interrelated concept of Baras Aswad, Quba Muqashira, and Juzam (laprosy) instead of Tagashshur-al-Jild. He defined Baras Aswad is type of Quba Muqashira and early stage of Juzam. The disease is caused by khilt ghair tabai sauda and characterized by roughness of skin, associated with sever itching and peeling of large round scales similar to scales of fish from the body. In addition, he explained that it is worst disease and not easy to treat when it becomes chronic and mainly occurs in winter season. While in treatment he mentioned elimination of ghair tabai sauda (morbid material), fasd (venesection), hammam (steam bath), application of oils locally and avoidance of alcohol consumption (45). Nauh bin Mansoor Algamari, (10th century AD) in his book Ghina Muna advised sirka (Vinegar) and sareesh or milh to treat scaling of nails (Tagashshur-al-azfar, Azfarul gabiyah) (46). Ibn Zohr (Avenzoar, 1094-1162 AD) in his book Al-Taysir fil-Mudawat Wal-tadabir (Book of Simplications Concerning Therapeutics and Diet) described the etiopathogensis of Tagashshur-al- Jild as a skin disease in which excessive amount of abnormal sauda (black bile) is accumulated in the skin which hamper the nutrition and causes malfunctioning of skin, thus skin loses its power to remove this morbid material. As a result; skin tissues become dead and fallout in the form of scales. For treatment purpose he advised removal of morbid material by using munzij sauda (Concotive drugs for black bile) (47). Allama Qarashi

(1210-1298 AD) mentioned scaling in Tagashshural-Jild is looks like the scales of snakes (48). Ibn Hubul Baghdadi (1122-1213 AD) in his book Kitabul Mukhtarat Fit Tib described that the causative factors of Tagashshur-al-Jild are namkin, shore, khushk madda (salty, irritant and dry humours). He stated to treat the disease by elimination of ghair tabai madda (morbid material), through steam bath and local application of oils. About Da'ulhaiah he mentioned it is a condition in which shedding of hairs are associated with shedding of skin due to the kharab and fasid madda (noxious and waste matter) (49). Ibn Rushd (Averroes, 1126-1198 AD) in his book Kitabul Kulliyat gave etiological concept of saudavi diseases and their familial occurrence. He mentioned that excessive formation of ghair tabai sauda occur in to the body due to internal cause or external environmental factors (diet, occupation and seasonal variations) and then spleen is not able to absorb it so it mixes with the blood and produces terrible diseases that cannot be treated easily (50). Ibn al Quff (1233-1286 AD) in his book Kitabul Umda Fil Jarahat wrote about the concept of Barse Aswad and Da'ulhaiah with same definition and treatment discussed by other physician (51). Nafees Ibn Auz Kirmani (1439 AD) in his book Moalajat Nafeesi mentioned that etiopathogensis of Tagashshur-al-Jild and Quba Mugasshira is same and considered Tagashshur-al-Jild is a type of Barse Aswad, because both diseases show fish like scales which shed off from the body. He described the disease occurs due to saudavi madda (black bile) which accumulates in the skin and results in thickened skin (52). Jamaluddinin in his treatise Agsarai mentioned Barse Aswad in place of Tagashshur-al-Jild. He further stated that Barse Aswad is also known as Quba Muqasshira and it is considered as preleprotic conditions and is generally caused by saudavi madda characterised by rough skin with scalling. (53). Bahwa Ibn khawwas khan (1512 AD) in his book Mojarrabat Tib Iskandari described psoriasis by name of kushth rog in which skin gets damaged with main presentation like itching and erythema (54). Dawood ibn Umar al-Antaki (David of Antioch, 1541 AD) in his book Tazkirah Oolil Albab described a disease of nails in which the nails become white, brittle and having similar clinical features like nail psoriasis (55). Akbar Arzani (1772 AD) in his book Tibb Akbari defined Tagashshur-al- Jild as a disease characterised by scaling, roughness and thickness. He described plantar psoriasis may be triggered by continues injury of foot wear (56,57) (this concept relates with Koebner phenomenon, which was noted by Heinrich Koebner in 1872). Azam Khan (1813-1902 AD) in his book Ramooz Azam and Akseer Azam, described psoriasis by the name of Tagashshur-al- Jild and mentioned that it is caused by ihtiraq khilt sauda (burning of black bile) and sometime associated with itching and scales. In addition he mentioned palmo plantar psoriasis is caused by hot, cold and dry morbid materials and continuous injures to the skin, further he stated that psoriasis on forehead is related with itching, burning and scale formation.

While in treatment he mentioned removal of *ghair tabai madda* (morbid material), locally emollients, oils and if extensive dryness is their then use *fasd* (venisection), *hammam* (steem bath) and *lu'obat* (emolents) (58,59).

HISTORICAL BACKGROUND OF PSORIASIS AFTER THE END OF 19TH CENTURY

In nineteenth century modern medicine was born. Advancements in histopathologic and bacterialogic techniques in the late 19th century were of great importance in the advancement of modern dermatology. Till the end of 19th century psoriasis was not accepted as a separate disease from leprosy and other diseases. Then British physician and dermatologist Robert Willian in 1809 was the first to recognise psoriasis as a clinically different disease from leprosy but used the word Lapra vulgaris instead of psoriasis. He described it as well demarcated erythematous plaques having white slivery scales commonly occuring on knees and associated with nail pitting (60). After Robert Willian, various authors favoured to use term psoriasis while others chose the term lapra. Alibert in 1822, noted that the disease has association with joint deformities and then Besnier, termed this disease as arthritis psoriatica. Further Erasmus Wilson pointed out psoriasis have relation with arthritic gout and rheumatic disease(16,17,26). Ferdinand von Hebra in 1841, eliminated the confusion between leprosy and psoriasis by separating the clinical features of psoriasis from leprosy and therefore removed the word lapra from the clinical description of psoriasis (14, 27, 29, 31, 32).

The 19th century second half was loaded with novel innovation of some devices to give support to the clinicians. Heinrich Koebner in 1872, first noted the tendency of skin injury to trigger psoriasis lesion known as Koebner phenomenon (14,16,27). Balmanno Squire in 1876, presented first logical reference about the application of Goa powder (natural product) for treating psoriasis (27). Heinrich Auspitz in 1885, described that when the psoriatic scales are removed the pinpoint bleeding occurs known as Auspitz sign (14). Willam James Munro in 1898, found a defining histological traits of psoriasis named as munro abcess in the outer layer of skin of psoriasis plaques (61).

Rapid changes in society in the 20th century had great and global influence on health and medicine, this period relates with the Progress in science and technology which results valuable developments in the research and influence on the life of the whole human society. In this century many authors evidenced that the disease is multifactorial, and multiple genes (PSOR1-PSOR 10), found on different chromosomes, have a role in pathology (30). Strater started treating psoriasis by X-ray first time and the therapy was continued to be used for psoriasis up to the 1980 (27). Leo Von Zumbusch in 1910, described a severe, pustular variant of psoriasis,

an uncommon type of psoriasis associated with fatigue and fever differing from typical plaque psoriasis (62). Eugen Galewsky in 1916, synthesised first preparation of Anthralini i.e. 1,8-dihydroxyanthrone in Germany for therapy of psoriasis and were shown to be effective (49). William Goeckerman in 1925 introduced a psoriasis treatment combined with application of crude coal tar and ultraviolet light radiations. The treatment was effective but it was a messy, time consuming and usually required hospitilization (27,63). Gustave peter Bucky in 1925, discovered a type of radiation known as infra roentgen or Grenz Rays for treatment of psoriasis (27). Woronoff in 1926, identified the ring of pallor skin surrounding a psoriatic plaques (64). Studer and Frey in 1949, in an animal study on rats found vitamin A subtoxic dose cause 'peeling' of horny layer of skin which striked the idea to use it for treating psoriasis, then after three years Studer and Schoch reported effect of vitamin A in psoriasis (65).

From 1952 topical Corticosteroids was identified in dermatologic therapy treatment. In the early-1960s topical corticosteroids were used as a treatment for psoriasis (66). Richard Gubner and colleagues in early-1950s found a remarkable reduction of the patient's psoriasis by aminopterin (closely related to methotrexate) by chance while treating rheumatoid arthritis (67,68). Folate inhibitors, like methotrexate, were first introduced in the 1950s and helped the response rate in disabling cases of psoriasis. Edmundson and Guy in 1958, descovered methotrexate (less toxic version of aminopterin) and approved by food and drug administration (FDA) latter in 1972.(69,70). Walter Schweckendieck in 1959 described the uses of fumaric acid and related substance for the treatment of psoriasis (71). In 1975, a novel aromatic retinoid etretinate compound showed ten times more encouraging therapeutic index in psoriatic patients than all- transretinoic acid (72).

Recently in preceding few years molecular genetics sighted on new corner of psoriasis related with gens and the beginning started by Russell in 1972, who was first to observe association between psoriasis and HLA-B1 3and HLA-B 17 (73,74). John Parrish and others in 1974, published a report on successful introduction of ultraviolet light with psoralens (PUVA) combinations for treatment of psoriasis (75). Mueller & Herrmann in 1979, observed cyclosporine improves psoriasis in one week pilot study while treating rheumatoid arthritis, then the drug was permitted by FDA in 1997for the treatment of psoriasis (76,77). JA Parish and KF Jaenicks in 1981, discovered narrowband UVB, they found that UVB wavelength between 200 and 313 nm maximised effectiveness while minimized side effects. Later 311nm was discovered as ideal wavelength for psoriasis treatment (13). In 1985 Morimoto and Kumahara reported psoriatic patient was cured by of 1 a, 25-dihydroxyvitamin D3 (oral administration) with a dose of 0.75 mg/day for two months while treating osteoporosis (78). Henseler and Christophers in 1985 in one study on 2000 psoriatic patients introduced the bimodal age concept. They identified that psoriasis occurs at two peaks of age; first <40 years (early age onset) commonly linked with HLA-Cw6, DR7, B13 and B57; and second one is non-familial (later age of onset) linked with HLA-Cw2 and B27 (79).

The time period around the beginning of the 21th century added trivial progressive superior inventions in spreading achievements of the science towards the prevention, mitigation, or removal of disease. In this period new drug therapies were developed and approved to cure psoriasis that show tremendous effect and make historical evolution. With the development of recombinant DNA techniques new biologic therapies have been developed that can be designed to specifically alter physiological responses (80). In 2003 FDA of the United States, approved first biological drug Alefacept as anti TNF α for the treatment of psoriasis but in 2011 it was withdrawn from the market. Then FDA approved Efalizumab (anti CD 211a) in 2003, Etanercept (anti TNFα) in 2004, Infliximab (anti TNFα) in 2006, Adalimumab (anti TNFα) in 2008, Ustekinumab as anti IL-12/IL-23p40, in 2009 Secukinumab as anti IL-17A in 2015, Ixekizumab as anti IL-17A in 2016, Brodalumab as anti IL-17A receptorin 2017 for treating psoriasis (81,82). Further in 2014, approved Apremilast (phosphodiesterase type 4 -PDE4) class to treat moderate to severe psoriasis (83).

CONCLUSION

Development and scientific improvement in the field of medical science has kept equal pace in all ages, but while the reviewing the history of medicine the data presented indicate Arabian and Egyptian physicians and philosophers cultivate medicine by examine things instead of ideas, gain knowledge by experience, record facts and establish their doctrine.

This article has shed light on the ways in which Greco-Arab medicine was having huge explanation and theories at a time about psoriasis. Their scholars, from around the known world, gathered a lot of information by observation as well as experiments and outlined new techniques and measures mentioned in the classical scripts that would form the basis of current medicine. The study of history of psoriasis is essential for the proper understanding of the evolution of the disease and to gain knowledge and ideas from predecessor and to bring to reality many ideas, which have arisen much earlier and remained only in the form of plans and designs.

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