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A Review on *Vyanga* vis a vis Melasma

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ABSTRACT:

Ayurveda is one of the oldest comprehensive health care system worldwide. *Ayurvedic* science being ancient and traditional still correlate with day to day medical conditions and their treatment. Melasma being a non communicable and non deteriorated condition is still a mental trauma in human life especially for the younger age group. Melasma is a common acquired condition of symmetrical hyper pigmentation typically occurring on the face with higher prevalence in females and darker skin types. It is is characterized by more or less dark brownish maculae with irregular contour , but clear limits on photo exposed areas especially on the face, forehead, temples and more rarely on the nose, eyelids, chin and upper lips. In *Ayurveda*, *vyanga* has been elaborated as one of the *kshudra rogas* (minor ailments). *VYANGA*, a type of *kshudra Roga*, characterized by *niruja* (painless), *shayav varna mandala* (bluish black patches) occurring specially on the face. The clinical features correlate with melasma which is acquired and symmetrical hypermelanosis . *Vyanga* is a disease which belongs to *swalpa* variety of *kshudra Roga*. *Vayu* aggravated by *Krodh* and *ayasa*, get associated with *pitta* and suddenly produces a thin grey coloured circular patch which reaches the face. As per medical science melasma, cutaneous pigmentation is the outcome of two important events, the synthesis of melanin by melanocyte and the transfer of melanosomes to surrounding Keratinocytes. Both modern and *ayurvedic* sciences have considered the use of topical as well as oral medications and their combinations for the treatment of *vyanga*. In Ayurveda,*vyanga* has been treated both by *antah parimarjan* and *bahya parimarjan chikitsa*. Several *ayurvedic* text such as *Sushruta Samhita* and *Ashtanga Hridaya* and *Sangraha* etc, have elaborated the pathophysiology and treatment of *vyanga*, the available references are scattered. So, there is a need of in-depth review and compilation of *ayurvedic* text and literatures which are effective for the management of *vyanga*.

Keywords: Melasma, *Vyanga*, *Kshudra roga*, *Antah parimarjan*, *Bahya parimarjan*, *chikitsa*, *Ayurveda*, *Vayu*, *Pitta.*

INTRODUCTION

Melasma is a common pigmentary disorder characterized by symmetrical hyper-pigmented macules on the face. It mainly affects women particularly of reproductive age with Fitzpatrick skin type 4-6 and in darker skin types, such as Hispanics, Asian and African americans[10]. It has a deleterious impact on patient's life quality. The condition can occur in men also. Female and male ratio of melasma

prevalence in India is approximately 4:1 and in Singapore 21:1. The aetio pathogenesis of melasma includes genetic factors, UV exposure, hormonal activity, drugs such as phenytoin and cosmetics etc[10].

Melasma is an acquired and symmetrical hypermelanosis characterized by more or less dark brownish maculae, with irregular contour, but clear limits, on photo exposed areas, especially the face, forehead, temples, and more rarely on the nose, eyelids, chin, and upper lips. Even minor changes in the cellular environment affect melanosomes and pigmentation. Numerous intrinsic and extrinsic factors are responsible for a whole range of responses in melanosome structure and distribution under different types of stress. Cutaneous pigmentation is the outcome of two important events, the synthesis of melanin by melanocytes and the transfer of melanosomes to surrounding keratinocytes. Number of melanocytes in human skin of all types is essentially constant. But the number, size, and manner in which melanosomes are distributed within keratinocytes vary. The melanin content of human melanocytes is heterogeneous not only between different skin types but also between different sites of the skin from the same individual.

Ayurveda has mentioned the melasma as *Vyanga* in *Kshudraroga* by all *Acharyas*. The etiological factors, pathogenesis of *Vyanga* are explained in *Ayurveda*. In *Vyanga Vata* and *Pitta dosha* are mainly involved. They along with each other due to causative factors suddenly produce *Vyanga* on face region. Because there are not many research articles found in it. Hence the research articles discuss will highlight, evaluate, elaborate and discuss about etiology, pathology and perspective *Ayurvedic* treatment of melasma with special reference to *Vyanga*.

AIMS AND OBJECTIVES

1. To search and re-evaluate the *Vyanga* in various *Ayurvedic* literatures with special references to melasma.
2. To evaluate and elaborate the aetiology, pathophysiology of *Vyanga*.
3. To elaborate and discuss the management of *Vyanga* w.s.r. to melasma.

MATERIALS AND METHODS

The article is based on review of *Ayurvedic* texts and research papers. Materials related to *Vyanga* and melasma have been collected from *Ayurvedic Brihatriyi*, *Laghutriyi* and other *Ayurvedic* books. We have also referred modern texts, journals and search various websites to collect information on the relevant topics.

Conceptual Study

Ayurvedic Disease review: According to *Ayurveda Vyanga* is a *Raktapradoshja vikar*. The proper references for it found in both *Brihatriyi* and *Laghutriyi*, but it is given in short context. All *Acharyas* mentioned it in *Kshudraroga*. Main causative factor for *Vyanga* is Anger and excessive Hard work[2]. In it probably *Doshas* involved are *Udaan vayu*, *Bharajak pitta* and *Dushya Ras* and *Rakta dhatu*.

Mechanism Of Melasma Formation

Darkening of the skin due to the over-production of melanin by overactive pigment cells called melanocytes. However, various factors can provoke melanocytes to go into overdrive, and these different root causes are distinguished as different types of brown spots. Epidermal melanin deposition causes a brownish appearance, and dermal melanin appears bluish. Combined epidermal and dermal melanin deposition appears grey. It is a dermatological disease easily diagnosed by clinical examination, typically chronic, with frequent recurrences, great refractoriness to existing treatments, and with many unknown physiopathologic aspects.

There is no consensus as to the clinical classification of melasma. Two patterns of facial melasma are recognized:

CENTRAL-FACIAL, which affects the central region of the forehead, mouth, lips, supralabial area, and chin; and

MALAR, which affects the zygomatic region. Some authors also add a third and less frequent pattern, called mandibular.

There are countless factors involved in the etiology of melasma, but none of them can be mentioned as the only factor leading to its development. They include, genetic influences, exposure to UVR, pregnancy, hormone therapy, cosmetics, phototoxic drugs, endocrinopathies, emotional factors, anti-convulsive drugs, and others with historic value[10]. However, it seems that genetic predisposition and exposure to sun radiation play an important role, considering that melasma lesions are more evident during or shortly after periods of exposure to the sun. Jointly, comparative studies on skin affected by melasma and normal adjacent skin found that this condition is characterized by epidermal hyperpigmentation without increase in the number of melanocytes, increase in the quantity of melanin in all layers of the epidermis, increase in the number of melanosomes, and augmented dermal elastosis[10].

However, in *Ayurveda*, Melasma has been elaborated as one of the *Kshudra rogas* (minor ailments). Melasma is called as *Vyanga* in *Ayurveda*. The literary meaning of *vyanga* is *"vi + aṇga*"i.e. ('*vi*' means *vikṛta*, *vigata*, *vikala*) *vikṛta anga*. Description about *Vyanga* is found in almost all the *Ayurvedic* classics. *Kshudrarogas* are those group of disorders which are basically characterized by *alpa rupa* or these are also termed as *Alpa Vyadhi*,or as *Swalpa*, *Adhama* or *Krura Vyadhi*. The word *Vyaṅga* literally means - Spotted, speckled, freckles on the face, a blot or blemish. *Vyaṅga* has been described by all the *bṛihattrayī.* A detailed and separate description of *Vyanga* is described in the chapter of '*Kshudra Roga'* in Susruta Samhitā which includes *Nidana, laksasa, samprapti* and *sapekṣa nidana*. Both Caraka Saṁhitā and Suśruta Saṁhitā considers Vyaṅga as a 'Raktaja Roga' & a common *samprapti* for *Tilakalaka*, *Piplu*, *Vyanga* and *Neelika* in *Trisothiya Adhyaya* has been given[1]. Individuals who belong to *Pitta Prakṛti* are said to be prone to *Vyanga*. More elaborate description is available in *Astanga Hrdaya Uttaratantra*, in the *'Ksudra Roga PRAKARANA'* where in the *Dosanusara Laksanas* of the disease are explained in detail[3]. In *Madhyakala, Madhava Nidana, Sarangadhara Samhita, Bhavaprakasa, Cakradatta, Yogaratnakar* have described about the disease *Vyanga* in the context of *Kshudra roga*.

Causative Factor Of *Vyanga*:

Acharya Charaka did not specify the causes of *vyanga*. Overall according to him *pitta* vitiated causes are responsible of *vyanga[1]*. As per *Sushruta, krodha* and *aayasa* are the causes of *vyanga[2]*. *Madhavanidana* and *Yogaratnakara* also support *Sushruta's* point of view. According to *Astanga Samgraha* and *Astanga Hridaya*, *shoka* and *krodha* are the main causes for *vyanga[3]*.

Samprapti

Samprapti is defined as the process involved in the pathogenesis of a disease by vitiated *Doshas* which are constantly circulating in the body. As *Acharyas* says, *Prakupita vata* due to Anger and hard work (*Krodh,ayaas*) along with *Pitta dosha* in combined form suddenly came to facial region (*Sahasaamukhamagatayam)* and produce blackish (*Shayav*) colour's thin (*Tanukam)* patches[2].

Causative Factors

Mainly anger and excessive hard work.

Samprapti Ghatak

Dosha-Vata-pitta
Dushya- Ras, Rakta
Adhishthan-Mukhagat Tavak
Vyadimarg- Bhahya
Srotas- Rasvah, Raktavah
Srotodushtiprakar-Sang
Agni-Vishamagni
Sadhaya-Asadhayata-Sadhaya

Symptoms (Rupa)

1. Sudden onset on face region.
2. Painless, small and blackish in colour.

Clinical Types Of Disease

According to the *Doshas* predominance disease may be categorised into 4 sub types.

1. *Vatika*-Blackish coloured and rough in nature.
2. *Paittika*-Blue coloured in centre and copper coloured in periphery.
3. *Kaphaja*-Whitish in colour and itchy nature.
4. *Raktaja*-In center copper and on periphery blood coloured associate with burning and tingling sensation.

Modern Description Of Melasma

Melasma is a most common acquired pigmentary disorder that manifests as symmetric hyperpigmented macules and patches that mainly affects the face. It is of brownish coloured appearance. This form of facial pigmentation is sometimes called chloasma, but its mean green coloured skin, so for this condition term melasma is preferred. Melasma has a deleterious impact on patient's life quality. This disorder is most common in women. But it can occur in men also.

Epidemiology

The prevalence of melasma is varies between 1.5% and 33.3% depending on the population. Melasma is more common in women than in men. Its prevalence in women is around 50%-70% in pregnancy stage and 8%-29% of women on O.C Pills. In men its prevalence between 20.5%-25.38% of the cases. In men malar pattern is more common than the centrofacial and mandibular patterns. A study conducted in male patients with melasma has shown that the levels of testosterone were low indicating a role of subtle testicular resistance in the pathogenesis of melasma. In men with melasma include the use of vegetable oils especially mustard oil on face and

diethylstilbestrol therapy for prostate cancer also as an etiological factors.

Etiology And Pathogenesis

There are many factors implicated in etiology. These are Genetic backgrounds, UV radiation, pregnancy, OCPs, cosmetics and drugs such as phenytoin[9].

Genetic Factors

Racial and familial predisposition suggests that genetic factors contributes to pathogenesis of melasma. It is common in Hispanic and Asian racial groups with Fitzpatrick skin types 4-6. The rate of occurrence from different countries and even from same country shows a wide range of differences family history is associated with melasma on epidemiologic study.

UV Radiation

Sun exposure is generally one of the important cause of melasma. Repeated exposure to a suberythermal dose of UV radiation stimulates melanogenesis which increases skin melanin content. UV induced melanogenesis is mediated by direct effects of UV photons on DNA and on melanocyte membranes. Prolonged UV-B radiation exposure causes acute inflammation and elevation of histamine levels, leading to UV-B induced pigmentation[9].

Sex Hormones

A female preponderance suggests a role for the female sex hormones in the pathogenesis of melasma. It is a un-desirable cutaneous effect of oral contraceptives. In relation to **pregnancy,** melasma is generally considered as a common physiologic skin change due to hormonal alterations[10]. Estrogens have an significant role in both physiological and pathological skin conditions including pigmentation. A few studies suggest that estrogen increase the mRNA expression of tyrosinase, tyrosinase related protein and the activity of tyrosinase in cultured normal human melanocytes.

ACTH

Hyperpigmentation is also known to be caused by the stimulant effect of excess adrenocoticotropic hormone (ACTH) on the melanocytes to produce melanin[9]. The hyperpigmentation is caused by high levels of circulating ACTH that bind to the melanocortin 1 receptor on the surface of dermal melanoctes. Other melanocyte stimulating hormones produced by the pituitary and other tissues include alpha – MSH(contained within the ACTH molecule), beta- MSH, and gamma-MSH. When stimulated, the melanocyte changes the color of pigment to dark brown or black.

PHENYTOIN

Pigmentation resembling melasma develops in 10% of patients receiving phenytoin. The drug exerts direct action on melanocytes causing dispersion of melanin granules and also induces increased pigmentation in the basal epidermis. but pigmentation disappears in a few months after withdrawal of drugs[10].

COSMETICS

Tar, hydrocarbon derivatives like benzene, xylene and poor quality of mineral oil containing cosmetics play an important role by photo-toxic mechanism.

Others Factors

Cell to cell interactions play an important role in homeostasis of adult tissues. paracrine factors derived from dermal fibroblasts, abnormalities in dermal vasculature and factors regulating melanosome ph and ion transport in skin pigmentation may also be involved.

Classification Of Melasma

On the depth of melanin pigments it is classified into 3 types.(Table 1)

1. Epidermal- It appears light brown in colour. In this type melanin deposit in basal and supra-basal layers of epidermis. In wood's light examination it show enhancement to contrast. It show good response to treatment.
2. Dermal- It is bluish grey in colour. In it melanin loaded melanophages seen in superficial and mid dermis. In wood's light examination it shows no enhancement. It responds poor to treatment.
3. Mixed- It is of dark brown colour. There melanin deposition found in the epidermis and dermis. In woods light examination some area shows contrast enhancement. It shows partial response to treatment.

Clinical Features

Sanche et al classified melasma into three groups.

1. Centro facial: 63% cheek, forehead, upper lip, nose and chin.
2. Malar: 21% malar area on face
3. Mandibular: 16% ramus of mandible.

Ayurvedic **Management**

Ayurvedic management mainly comprises of the followings.

1. Removal of cause *(Nidanparivarjan*)
2. *Shodhana chikitsa:*

- Bloodletting process(*shiravedana*)

- Massage(*Abhayanga*)- *Manjishathadisaneha*
  KumkumadiTailam
  Kasisadighrita
  Sarshap oil

- *Nasya -Bhringrajsvaras*

3 . *Shamanchikitisa* For Internal use:

a). *Gandhpashan churan*
b). *Somraji churan*
c). *Avalgujaadi gutika*
d). *Khadiroudak*

4. For external use*(lepa)*

Varnay Mahakashaya[1]
Eladi Gana
Arjuntvagaadi lepa[6]
Savarnkarlepa
Ingudi majja
Manjishthadi lepa[6]
Ayorajadi lepa
Kanak tailam
Aagardhoom tail
Arakasheradi lepa[6]
Kaliyakadi lepa[6]
Shalmali lepa
Yavchurnadi lepa
Masoor lepa[6]
Jaatiphaladi lepa[6]
Navneetadi lepa[6]
Dadhisaraadi lepa
Jeerakadi lepa
Dviharidraadi lepa
Varnak lepa
Rakshoghan lepa
Raktachandanaadi lepa[6]
Utpalaadi lepa
Varuntavakchuran with Ajaadudh(Goat milk)
Angraj lepa
Udvartan
Shirish, Lamajjak, Naagkeasr, Lodhra
Haritaki+Lodhra+Neempatra+Karanj+Daadim bark

DISCUSSION

Vyanga has been elaborated in *Ayurveda* as a *Kshudra roga* (minor ailment), as it is not a serious or life threatening disorder but it seriously impact quality of life of person.

In *Samprapti* (Pathophysiological) process of *vyanga*, factors stated by *Acharya's* has given special emphasis towards psychological factors like *Krodha* (anger), *Shoka* (grief) and *Shrama* (exhaustion), which are commonly found in most of the patients[2]. In *Samprapti* of *Vyanga*, *Acharya Charaka* has mentioned that the aggravation of *Pitta* along with *Rakta* is the chief culprit for initiation of the pathology[1].

Ayurveda as well as modern sciences advise the use of tropical as well as oral medications. Modern science describes the treatment as per the severity of *vyanga*, similarly *Ayurveda* has also advised *Raktamokshana* for severe cases of *vyaga*. *Ayurveda* belives in expelling the root causes of *vyanga* by giving *Sodhana Chikitsa*

Here an effort is made to compile scattered references of *vyanga* under one roof and also a comparison is made between *Ayurveda* and modern medicines with regards to understanding of *vyanga.*

CONCLUSION

Melasma is a common pigmentary disorder having deleterious impact on patient's life quality. As per *Ayurveda* Vyanga is a disease mentioned in *Kshudrarogadhikar*. In *Ayurvedic* treaties there is a good answer to this disease because it has great treasure of single and compound drugs able to breakdown the *Samprapti* of *Vyang*.

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Table 1

S.no	Chapter	Classical Procedure Recommended
1	*Sushruta Samhita* *Su.Chikitsa*(20/33-36)	*Siravedha, Pralepa*
2	*AstangaHridya* *Uttar Sthan*(32/15-32)	*Siravedha, Lepa*
3	*Astang Samgraha* *Utttar sthan*(37/22-33)	***1.*** *Vataj Vyanga –* *Pana, Abhyanga,Navan, pralepa* ***2.*** *PittajVyanga-Abhyanga,Navan,Virechana, rudhiravsechan,lepa.* ***3.*** *Kaphaj Vyanga –* *Pana, Navan, Abhyanga, pralepa* ***4.*** *Raktaj Vyanga-* *Siravishravan,Vaman, Virechana.*
4	*Bhav Prakash.* *Madhyam Kh.Adhikar(61/39)*	*Siravedha, Pralepa, Abhyanga*
5	*Yoga Ratnakara* *Uttar Sthan/ (1-12),14*	*Siravedha, Pralepa, Abhyanga*
6	*Chakradatta* *Kshudraroga chikitsa* *55/40,43,44,48,49*	*Siravedha, Pralepa, Abhyanga*
7	*Bhasajya Ratnawali* *Ksudraroga chikitsa adhaya 60/37, (40-43),(48), (90-92),(107-124),(155-157)*	*Siravedha, Pralepa, Lepa, Abhyanga*