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## A Review on *Samprapthi* and *Lakshana* of *Mukhadushika* with special reference to *Acne Vulgaris*

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### ABSTRACT

*Mukhadushika* is one among skin diseases that affects the face and disturbs physical, social and psychological state of individuals. According to *Acharya Sushruta*, it is a *Kapha Vata pradhana* disease with *Rakta* as *dushya*, wherein *Acharaya Vagbhata* consider *Meda* as a *dushya*. *Acne vulgaris* can be a probable co-relation of *Mukhadushika* in contemporary science. It is one of the most common dermatological problem that affects virtually all individuals at least once during life. The key components of its aetiology includes increased sebum production, colonisation of pilosebaceous ducts by *Propionibacterium acnes*, which in turn causes inflammation, hypercornification and occlusion of pilosebaceous ducts. In this article, an attempt is made to review the *samprapthi* and *lakshana* of *Mukhadushika* with special reference to *Acne vulgaris*.

### KEYWORDS

*Mukhadushika*, *Acne Vulgaris*



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## INTRODUCTION

The word '*mukha*' means 'face' or 'countenance' and '*dushika*' means 'face spoiler' or 'eruption that configures the *mukha* (face)<sup>1</sup>. The word '*Mukhadushika*' is derived from '*Mukham dushayathi vivarnam karothi iti Mukhadushika*' means that which disfigures the *mukha* along with causing discolouration<sup>2</sup>. It is one among the *Kshudrarogas*<sup>3</sup>. It is primarily seen on the face of youth (*yuva*). *Mukhadushika* can be probably correlated to Acne Vulgaris in contemporary science. According to the Global Burden of Disease (GBD) study, acne vulgaris affects approximately 85% of young adults with age group ranging from 12–25 years<sup>4</sup>. In India, research studies have reported acne in 50.6% of boys and 38.13% of girls in the age group of 12-17 years<sup>5-6</sup>. Acne is the chronic inflammation of the pilo-sebaceous units ( hair follicle , hair shaft and sebaceous gland.). This condition generally starts after puberty and affects more than 90% of adolescents<sup>7</sup>. Acne vulgaris is a self-limited disease and pleomorphic in presentation with a variety of lesions consisting of comedones, papules, pustules, nodules and as sequelae to active lesions, pitted or hypertrophic scar formation<sup>8</sup>.

## OBJECTIVES

- 1) To review the *Samprapthi* of *Mukhadushika* with special reference to Acne vulgaris.
- 2) To review the *Lakshanas* of *Mukhadushika* with special reference to Acne vulgaris

## MATERIALS

Material are collected from Ayurvedic classical literature, Modern text books, Available research up-dates and scientific information available on internet .

## REVIEW ON MUKHADUSHIKA

*Mukhadushika* is one among the *kshudrarogas* which has *alpa hetu*, *alpa lakshana* and needs *alpa chikitsa*. It is caused by *Kapha* and *Vata dosha* with *Rakta* as *dushya* according to *Sushruta*<sup>9</sup> and *Medas* as *dushya* according to *Vagbhata*<sup>10</sup>. This *roga* appears like *Shalmali kandaka aakara*, *medogarbha*, has *saruja pidaka* which is *Ghana* . It is primarily seen on the face of youth ('*mukhe yunam*').

## NIDANA

As *Mukhadushika* is a *kshudraroga*, which has *alpa hetu*, *alpa lakshana* and needs *alpa chikitsa*, *Nidana* of *Mukhadushika* has not been mentioned in Ayurvedic literature. Assessment of *samanya dosha prakopaka nidana* could clarify this factor.



## SAMPRAPTI

Due to *nidana* there will be vitiation of *Vata-Kapha dosha*. Also there will be vitiation of *Raktadhatu*. Inturn, due to *ashraya ashrayi bhava* , it affects *Pitta dosha*. *Medodhatu* is also a contributing factor in *Mukhadushika*. *Twaksnigdhatu* in *youvana(taruna/yuva)* which occur as *swabhava*(naturally) also contributes to the *samprapthi*.

All these factors produce following *lakshanas*.

## LAKSHANA<sup>10</sup>

The *lakshanas* are mentioned below (Table 1).

**Table 1** *Lakshanas of Mukhadushika*

Sl no.	Parameter	Characteristics
1.	Shape of lesion	<i>Shalmali kantaka aakara pidaka</i> (the sprout on the bark of <i>shalmali</i> tree, <i>bombax malabaricum</i> .)
2.	Induration	<i>Ghana</i> (hard)
3.	Fluid in lesion	<i>Medogarbha</i> (containing fat in eruption)
4.	Pain	<i>Sa ruja</i> ( painful)

## REVIEW ON ACNE VULGARIS

Acne vulgaris is a self-limited disorder primarily of teenagers and young adults, although perhaps 10–20% of adults may continue to experience some form of the disorder. The permissive factor for the expression of the disease in adolescence is the increase in sebum production by sebaceous glands after puberty.

## ETIOPATHOGENESIS

The key components of aetiology are increased sebum production, colonisation of pilosebaceous ducts by *Propionibacterium acnes*, which in turn causes inflammation, hypercornification and occlusion of pilosebaceous ducts<sup>11</sup>.

### Causes of Acne includes ;

- Use of medications like lithium, steroid and anticonvulsants
- Sunlight exposure
- PCOD
- Pregnancy
- Use of occlusive wear like shoulder pads, backpacks and underwire brassiers<sup>12</sup>

During puberty, androgens stimulate an increase in the size of the sebaceous glands and sebum production is increased . Sebaceous glands require androgenic stimulation to produce significant quantities of Sebum.

These large glands themselves generate more active androgen metabolites through the activity of type 1, 5 $\alpha$ -reductase; one effect of these metabolites is to further increase the size of the sebaceous glands. Sebum acts in association with bacteria to produce keratinization and as a consequence of this blockage of the pilosebaceous duct and comedo formation take place.



The primary organism responsible for this is *Propionibacterium acnes*. This organism increases in number during sudden outbursts and is key factor in the change from non-inflammatory to inflammatory acne. This bacterium produces many inflammatory substances, such as lipases, proteases, hyaluronidases, and chemotactic factors that play key roles in producing lesions.

Sebaceous gland activity is regulated by androgens from the testes and adrenals, which stimulate, and oestrogens, which seem to suppress activity. In the adult male the glands are normally maximally stimulated, leading to more severe in boys than in girls. The skin itself is a major site for androgenic conversion similar to that seen in the prostate gland and in the male genitalia. Dihydrotestosterone, (DHEA) rather than testosterone, may be the end-organ effector and is formed within the target cells where it stimulates lipogenesis as well as mitosis. Oestrogens reduce the size of sebaceous glands and sebum production is diminished. Both androgens and progestogens increase sebum excretion and oestrogens reduce it, although the hormonal effects may also reflect end-organ sensitivity, as most patients have normal hormone profiles<sup>13</sup>.

#### **CLINICAL FEATURES OF ACNE VULGARIS<sup>14</sup>**

The primary site of acne is the face and to a lesser degree the back, chest, and shoulders. On the trunk, lesions tend to be numerous near the midline. The disease is characterized by a great variety of clinical lesions. The lesions may be either non-inflammatory or inflammatory. The non-inflammatory lesions are comedones, which may be either open (blackheads) or closed (whiteheads). The open comedo appears as a flat or slightly raised lesion with a central dark-coloured follicular impaction of keratin and lipid. The closed comedones, in contrast to the open comedones, is difficult to visualize. They appear as pale, slightly elevated, small papules and do not have a clinically visible orifice. Stretching of the skin is an aid in detecting the lesions. Because the closed comedones are potential precursors for the large inflammatory lesions, they are of considerable clinical importance. The inflammatory lesions vary from small papules with an inflammatory areola to pustules to large, tender, fluctuant nodules. Whether the lesion appears as a papule, pustule, or nodule depends on the extent and location of the inflammatory infiltrate in the dermis.

The characteristic scar of acne is a sharply punched-out pit. Where inflammation has been marked, the pits may have multiple openings. Less commonly, broader pits



may occur, and in rare instances, especially on the trunk, the scars may be hypertrophic.(Table 2).

**Table 2** Clinical Features of Acne Vulgaris

Parameter	Characteristics
Common Distribution	Face, upper back and chest
Morphology	Open and closed comedones, erythematous papules, Pustules and cysts
Stages	Inflammatory and Non inflammatory

## DISCUSSION ON SAMPRAPTHI OF MUKHADUSHIKA WITH SPECIAL REFERENCE TO ACNE VULGARIS:

*Samprapthi* is not mentioned for *Mukhadushika* in any of the classics. The description of *Mukhadushika* in different classics shows different stages of same *Samprapthi*. Initially the non inflammatory stage of acne vulgaris can be attributed to *medogarbha*, *saruja* and *Ghanapidaka* stage. In this stage, there is only *dosha* involvement along with other factors like *Vaktra snigdhata*. The involvement of *Rakta dhatu* along with *Vata* and *Kapha* may lead to inflammatory lesion.

The closed comedon may be the precursor of an inflammatory stage where there will be vitiation of *Kapha*, *Vata* and *Rakta*. The vitiation of *Rakta* and *Sweda* inturn leads to vitiation of *Pitta*<sup>15</sup>. According to *Acharya Charaka*, when the aggravated *Pitta* gets

localized in *Rakta* and *twak* there will be formation of *Pidaka*. Along with the presence of *vata-kapha* and *rakta* (inturn *pitta*) *dushti*, which favours the growth of *Propionibacterium acne* leading to acne vulgaris.

*Acharya Bhavprakasha* has mentioned *Swabhava*<sup>16</sup> as the cause of *mukhadushika*, besides the *aharaja* and *Viharaja nidanas*. In this context *Swabhava* can be understood as *youvana*, where *shukra dhatu* is produced in more quantity which is a natural process. This can be understood as excess production of androgen during adulthood. *Acharya Sarangadhara* has also mentioned the same context as *vaktra snigdhata* is *shukradhatu mala*<sup>17</sup>. The activity of androgens that speed up the *shukradhatu* function, leading to more *mala* formation, that is *Twaksnigdhata*.

Similar understanding can be seen in contemporary science as sebaceous gland activity is regulated by androgens from the testes and adrenals, which stimulate, and oestrogens, which seem to suppress activity. When pathophysiology of Acne vulgaris is analysed, Sebum acts in association with bacteria to produce keratinization and as a consequence of this blockage of the pilosebaceous duct and comedo formation take place. In the adult male the androgens from the testes and adrenals stimulate sebaceous glands



maximally stimulated, leading to more severe form in boys than in girls.

Possibly, along with the vitiation of *vatakapha dosha* and *rakta*, there can be malfunctioning of *medo dhatwagni* resulting in excess of *sweda* which obstruct the *lomakoopa* causing *medogarbha pidakas*. *Twakdhatu/ rasadhatu* can also be attributed in the *samprapthi* since the *mala* of *Mamsadhatu*, the *romakupa mala* is having a role in pathogenesis. Also *charmasneha* is the *mala* of *Majjadhatu* which can be attributed to sebaceous secretions in *Mukhadushika*.<sup>18</sup>

In total, *Kaphadosha*, *Vatadosha* and *Raktadhatu* vitiate and obstruct the skin pores i.e. *Lomakupa*(pilosebaceous unit) . Chronic inflammation of the pilosebaceous units leads local swelling and micro comedones formation.

*Paaka* of comedones due to the inflammation by the supportive elements in micro comedones cause pustule, papule and cyst formation. Rupture of these microcomedones leads to *Vrana Vastu* (scar) formation<sup>19-20</sup>.

## ANALYSIS OF SAMPRAPTI GHATAKA:

### DOSHA:

*Kapha* and *Vata* as the causative factors of this disease.

### DUSHYA:

*Rasa, Rakta, Mamsa, Meda, Majja, Shukra*

## SROTAS

Particularly *Swedavaha srotas* is obstructed by *Kapha* and *Vatadosha*. *Sweda (medo mala)*, which obstruct the *lomakoopa*(*swedavaha srotomoola*) causes *medogarbha pidakas*. *Twakdhatu/rasa dhatu* vitiation is evident in *samprapthi* when the *mala* of *Mamsadhatu*, the *romakupa mala*, is involved in pathogenesis. Also *Majja mala* is *charmasneha* which can be attributed to sebaceous secretions in *Mukhadushika*.

### SROTODUSHTI:

Here we can see two types of *Srotodushti*.

*Sanga*: The path of *Sweda* is obstructed by *Kapha* and *Meda*.

*Atipravritti*: According to *Acharya Sharngadhara* there is excess secretion of *Shukradhatu mala* i.e. *Twaksneha*.

## AGNI

Among all the *Agnis*, *Jatharagni mandhya* is seen in this disease. Because of *Jatharagni mandhya*, *Ama* is formed, which again vitiates the *rasa* and *Rakta*. *Ama* producing *srotorodha* in the form of *sanga* leads to the pathology of *Mukhadushika*. Also *medo dhatwagni mandya* is seen on its analysis.

## ROGAMARGA

*Mukhadushika* is mostly expressed on the skin of the face. So it can be considered as *Bahya rogamargagata Vyadhi*.

## VYAKTI



The lesions of the disease are mostly seen on the face, so the *Vyaktisthana* of the disease is *Mukha*.

### UDBHAVA STHANA

*Mukhadushika* is considered as an *Amashayotha Vyadhi* because the main *Dosha* of the disease is *Kaphadosha*.

**Thus, the *Samprapti Ghataka* can be concised as given in table 3**

**Table 3** *Samprapthi Ghatakas of Mukhadushika*

1	Dosha	Kaphavata
2	Dushya	Rasa,Rakta,Mamsa,Medas, Shukra
3	Srotas	Swedavaha,Raktavaha,Rasavaha
4	Mala	Pitta, Sweda, Twak Sneha,
5	Srotodushti	Sanga, Atipravruithi
6	Agni	Dhatwagni Mandya
7	Rogamarga	Bahya Marga
8	Udbhavasthana	Amashayotha
9	Vyakthasthana	Mukha

## DISCUSSION ON LAKSHANAS OF MUKHADUSHIKA WITH SPECIAL REFERENCE TO ACNE VULGARIS

Primary site of acne is the face and to a lesser degree the back, chest, and shoulders. *Mukhadushika* appears on face only. But due to the intensity of manifestation, it can manifest in the other sites and can be coined to the term *youvanapidaka*.

The lesions of acne may be either non-inflammatory or inflammatory. The non-inflammatory lesions are comedones, either open (blackheads) or closed (whiteheads).

The open comedo appears as a flat or slightly raised lesion with a central dark-colour follicular impaction of keratin and lipid. This non-inflammatory comedo can be attributed to *Kapha Vata dushti* causing *Medogarbhha* and *Ghana pidaka* development. Closed comedones are precursors for the large inflammatory lesions. The inflammatory lesions vary from small papules with an inflammatory areola to pustules to large, tender, fluctuant nodules. This can be attributed to the stage where *Rakhdhatu* is vitiated and is associated with *Pitta dosha* also. Whether the lesion appears as a papule, pustule, or nodule depends on the extent and location of the inflammatory infiltrate in the dermis. Therefore, the overall symptoms that develop in *Mukhadushika* are *Pidaka* (eruption similar to *shalmalikantaka*) which is *Saruja* (pain), *Ghana* (thick), *Medogarbhha*(containing fat in eruption), *Kandu*(itching associated with *kapha*), *Sa rakthata*(bleeding associated with *pitta* and *rakta*), *Daha* (burning sensation due to *pitta* and *raktha* ),*Twak Snigdhatu*(greasy skin) and *Nimnata*(erosions or partial epidermal loss).

## CONCLUSION

The non-inflammatory stage of acne vulgaris can be attributed to *medogarbhha* ,





*saruja* and *Ghana pidaka* stage. In this stage, there is only *vata kapha dosha* involvement along with other factors like *Vaktra snigdghata*.

The involvement of *Raktadhatu* along with *vata* and *kapha* may lead to inflammatory lesion. On analysis of *samprapthi*, as there is *rakta* as *dushya*, which is inturn the *ashraya* of *pitta*. So if the *Rakta* is vitiated, there is vitiation of *Pitta*. Also another site of *pitta* is *sweda*. If *rakta* and *sweda* get vitiated, the vitiation of *pitta* is obvious. Therefore, along with the presence of *vatakapha* and *rakta(inturnpitta) dushti*, there is a chance of growth of propionibacterium acne, which is the primary organism in manifestation of acne vulgaris.

The adolescence age and oily skin is a cause to the formation of *Mukhadushika*. When *shukradhatu* is in a predominant state in adolescence, and *vaktra snigdghata* occurs as a *shukradhatu mala*. Androgens stimulate an increase in the size of the sebaceous glands and, hence, sebum is produced in a greater degree. Sebum acts in association with bacteria to produce keratinization and as a consequence of this blockage of the pilosebaceous duct and comedo formation take place. Rupture of these comedo will lead to scar formation. Vitiation of *vata kapha dosha* and *rakta*, there can be malfunctioning of

*medodhatwagni*. This result in excess production of *sweda* (*sweda* is *medo mala*), which obstruct the *lomakoopa* (*swedavaha sroto moola*) causing *medogarbha pidakas*. The *mala* of *Mamsadhatu*, the *romakupa mala*, will also play role in the pathogenesis. Also *Majjadhatu mala* (the *charmasneha*) play a role on *samprapthi* which can be attributed to sebaceous secretions in *Mukhadushika*.

The description of *Mukhadushika* in different classics shows different stages of same *Samprapthi*. Initially the non inflammatory stage of acne vulgaris can be attributed to *medogarbha*, *Saruja* and *Ghana pidaka* stage. If the closed comedon may be the precursor of an inflammatory stage where there is vitiation of *Kapha*, *Vata* and *Rakta*. Inflammatory acne vulgaris can be attributed to the *samprapthi* told by *Susrutha*.

The review study reveals the probable correlation of *samprapthi* and *lakshana* of *Mukhadushika* with special reference to Acne vulgaris.

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