

CONCEPT OF DOSHAGATI IN REFERENCE TO KOSHTHA AND SHAKHA – A REVIEW

Vilas Kad S¹, Komal Gulakari S^{2*}

1. Professor & Head, Dept. of Roga Nidana Avum Vikriti Vigyan, SVNHT's Ayurved Mahavidyalaya, Rahuri, Maharashtra, India.
2. PG Scholar, Dept. of Roga Nidana Avum Vikriti Vigyan, SVNHT's Ayurved Mahavidyalaya, Rahuri, Maharashtra, India.

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Abstract

In Ayurveda, the actual intrinsic factors for disease are Vata, Pitta and Kapha. These Doshas are susceptible to imbalance and vitiation. Tridoshas are the fundamental elements responsible for movement, transformation and cohesion in the body. These are responsible for both health and diseases in equilibrium and un-equilibrium states respectively. Gati means movement and the word Doshagati implies movement of Doshas. Doshagati is a condition characterized by variation in the sites of Doshas. Doshagati occurs in Roga-Marga (pathway of diseases) which includes Shakha (Shariradhatu or body tissues excluding the rasa dhatu or plasma and including the twak or skin), Koshtha (hollow organs and cavernous spaces or cavities of body) and Marma (vital organs). It is difficult to understand the movements of wind, sun and moon, similarly the activities of Vata, Pitta and Kapha are difficult to ascertain. The Gati of Dosha can only be accessed on the basis of signs and symptoms observed during Shatakriyakala (six stages of pathogenesis). This review of literature highlights Koshtha and Shakhagata Doshagati which is helpful in clinical studies.

Keywords: Doshagati; Koshtha; Shakha; Samprapti; Shatakriyakala.

*Address for correspondence:

Dr. Komal Sandesh Gulakari,
PG Scholar, Dept. of Roga Nidana Avum Vikriti Vigyan,
SVNHT's Ayurved Mahavidyalaya,
Shrishivajinagar, Rahuri, Ahmednagar, Maharashtra, India – 413 706
E-mail: komalgulkari@gmail.com

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INTRODUCTION

According to aim of Ayurveda, knowledge of Dosha (functional forces or factors) is important. Trividha Doshas (three-fold functional forces or factors) maintain the integrity of the organism by creating, assimilating and diffusing strength in the same way as sun, moon and wind which maintains the integrity of the terrestrial world.^[1] In normal state, they help in the proper functioning of the body, but in abnormal state, they surely afflict the body by causing various kinds of disorders.^[2]

Vayu is only active among Dosha, Dhatu (elementary tissues of the body) and Malas (waste products) and others are inert. The disease produced at a place in the body where Pitta, Kapha are taken by Vata is same as the rain that occurs at the place where clouds are taken by the wind.^[3] When Doshas are in Pravrudhha (increased) and Kshina (decreased), symptoms of Doshas are found to be in hyper-state and hypo-state respectively which is useful in assessment.^[4]

Doshagati means movement of Dosha or states of Dosha. Knowledge of Doshagati i.e. Kshaya (decreased), Vruddhi (increased), Samatva (Normal state), Avarana (covering or enveloping which is actually hindering or obstructing the movement or functions) are important for proper diagnosis and treatment.^[5] Normally Doshagati occurs two times in a day.^{[6][7]} This verifies the proper Karma (function) of that Dosha. Doshagati can be assessed by signs and symptoms during Shatkriyakala (six stages of pathogenesis).

Aim and objectives

1. To study the concept of Doshagati and its implementation to decide the line of treatment.
2. To study the concept of Shakha and Koshtha.

3. To study clinical symptoms of Shakhagati and Koshtagati.

MATERIAL AND METHODS

Only textual materials have been used for this study, from which various references have been collected. Main Ayurvedic texts used in this study are Charaka Samhita, Sushruta Samhita, Ashtanga Sangraha, Ashtanga Hridaya and available commentaries on these classics. Modern texts and related Ayurvedic texts, websites, articles have also been searched.

Concept of Doshagati

The factors which are not only capable of vitiation but also having the nature of vitiating other factors of the body are known as Dosha. Gati means movements. So Doshagati means the movement of Dosha. Chakrapanidatta stated that Doshagati is nothing but different Awastha (states) such as Kshaya, Prakopa (vitiating), etc.^[8] Doshagati is a condition characterized by variation in the sites of Dosha depending on its equilibrium or un-equilibrium state. In Equilibrium state, Doshas are present in their own site and performing normal functions whereas in un-equilibrium state, Doshas are in hypo-state or hyper-state. Doshagati occurs in Roga-Marga (pathway of diseases) which includes Shakha (Sharirdhatu or body tissues excluding the rasa dhatu or plasma and including the twak or skin), Koshtha (hollow organs and cavernous spaces or cavities of body) and Marma (vital organs). Dosha needs different treatment as per its site i.e. Koshtadi Sthanam (places like Koshtha). So the knowledge of signs and symptoms is important for deciding proper line of treatment.^[9]

Prakruta (Physiological) and Vikruta (Pathological) Doshagati

In Prakruta Doshagati, Doshas are in equilibrium state and are present in their own

site in the body so they perform their normal functions. But when these Dosha get vitiated, Doshagati becomes Vikruta.^[10] Natural imbalance in the state of Dosha in last, middle, first part of the day, age, etc. does not manifest any disease and is considered as Prakruta Doshagati. Substantial modifications in state or movement of Dosha results in initiation of disease process which is called as Vikruta Doshagati.^[11]

Vruddhi, Kshaya, and Sthana (Normal) Gati

Diminution either in quantity or quality or action of Dosha or a combined diminution is considered as Kshaya.^[12] Dosha in state of diminution gives up their normal signs and symptoms. In other hand, increase either in quantity or quality or action of Dosha or a combined diminution is considered as Vruddhi. Sthana (place) refers to normal state of Dosha which maintains the physical and mental health. Kshayadi Gati describes specific Awastha of Dosha.^[13]

Urdhwa (Upward), Adha (Downward), and Tiryaka (Oblique) Gati

Movements of vitiated Doshas in upward or downward direction to manifest disease are called as Urdhwa, Adha Gati respectively.^[14] e.g. Urdhwa Gati leads to Chardi (vomiting) and Adhagati leads to Atisara (diarrhoea). The movement of Dosha in oblique (Koshtha to Shakha) or transverse direction is known as Tiryaka Gati which leads to Kushtha (leprosy).

Koshtha, Shakha, and Marmasthisandhi (Vital Organs and Joints) Gati

Whenever the vitiated Doshas travel and get lodged in any of the three loci and manifest disease then the movement responsible is termed as Koshtha, Shakha or Marmasthisandhi Gati.^[15]

Ashayapakarsha Gati

Though Dosha has normal amount, it gets carried to another place by Vayu to produce diseases. This is known as Ashayapakarsha Gati.^[16]

Concept of Koshtha

Koshtha is derived from root Kush+Than.^[17] Koshtha is a cavity formed from Avarana (wall) which is consisting of Dhatus (solid structure). Koshtha is known as Mahastrotasa (the great channel) which is from mouth to the anus i.e. complete digestive system and as Abhyantara Roga Marga (internal pathway of diseases).^[18] Charaka states that Koshtha is the cavity containing fifteen organs - umbilicus, heart, pancreas, liver, spleen, kidneys, bladder, lungs, stomach, small intestine, large intestine, rectum, anus, Pakwashaya (large intestine including pelvic colon), Purishadhara (the cecum).^[19] Sushruta states that Koshtha is a cavity containing heart, lungs, stomach, intestine, rectum, pancreas and urinary bladder.^[20]

Concept of Shakha

Shakha is derived from root Shakh+Ach+Tap.^[21] Shakha mean Dhatus (branches of solid structures) that form Avarana (wall) of cavity. Shakha includes the Raktadi (blood cells) Dhātu and Twaka (skin).^[22] Term Shakha means branches of a tree. In body, this relates to the peripheral system comprising blood, tissues, skin and Rasa (plasma) Dhātu which is spread throughout the body like branches of a tree.^[23]

Koshtha to Shakha Doshagati

In Shakhagata Doshagati, vitiated Dosha moves from Koshtha to Shakha. The concept of Doshagati is constructed as the movement of Dosha from its primary seat i.e. Koshtha to any other site, under specific condition.

Table 1: Etiological factors of Koshtha to Shakha Doshagati^[24]

Factors	Explanations
Vyayamat	Excessive exercise leads to vitiation of Vata and increase in body heat which helps in dislodgement of the Doshas from their place.
UsmanahTaikshnyat	In pathological condition, these qualities are intensified. These are responsible for liquefaction of Doshas and dilatation of channels leading to Prakopa or Prasara stage of pitta and kaphadoshas in which Dosha travels from Koshtha to Shakha.
Ahitacharanat	It refers to intake of excess of unwholesome food leads to vitiation of Doshas resulting in increase in quantity and overflow like flood.
DrutatvaMarutasya	The vitiated Doshas deviated from normal direction by the force of Vata, moves from Koshtha to Shakha.

Table 2: Signs and Symptoms of Tridoshas Prasara^[25]

Vata	Pitta	Kapha
VataDosha manifesting at abnormal site (twitching the eyelids, dry patches of skin, cramping of a muscle, etc)	Burning sensation of increased intensity and frequency	Nausea
Increased gurgling of the intestines.	Burning associated with pain	Drowsiness
Irregular appetite (sometimes not hungry at regular mealtimes)	Itching(may be subtle)	Anorexia
Mild constipation	Appearance of red vesicle in parts of the body	Slow digestion
Noticeable decrease in stamina during normal daily activities	Muscle fatigue	Excessive saliva production
Indecisiveness, insecurity, or fearfulness.	Excessive perspiration	Excessive mucous production, especially in the throat & stool
Frequent forgetfulness	Greenish or yellowish discoloration of the stool or urine.	Pallor
Abdominal bloating.	Mounting frustration & dissatisfaction.	Loss of strength

In such condition, the Dosha undergo a state of diminution or excitation from its normality. This type of Doshagati is responsible for the production of Vyadhi (disease). (Table 1)

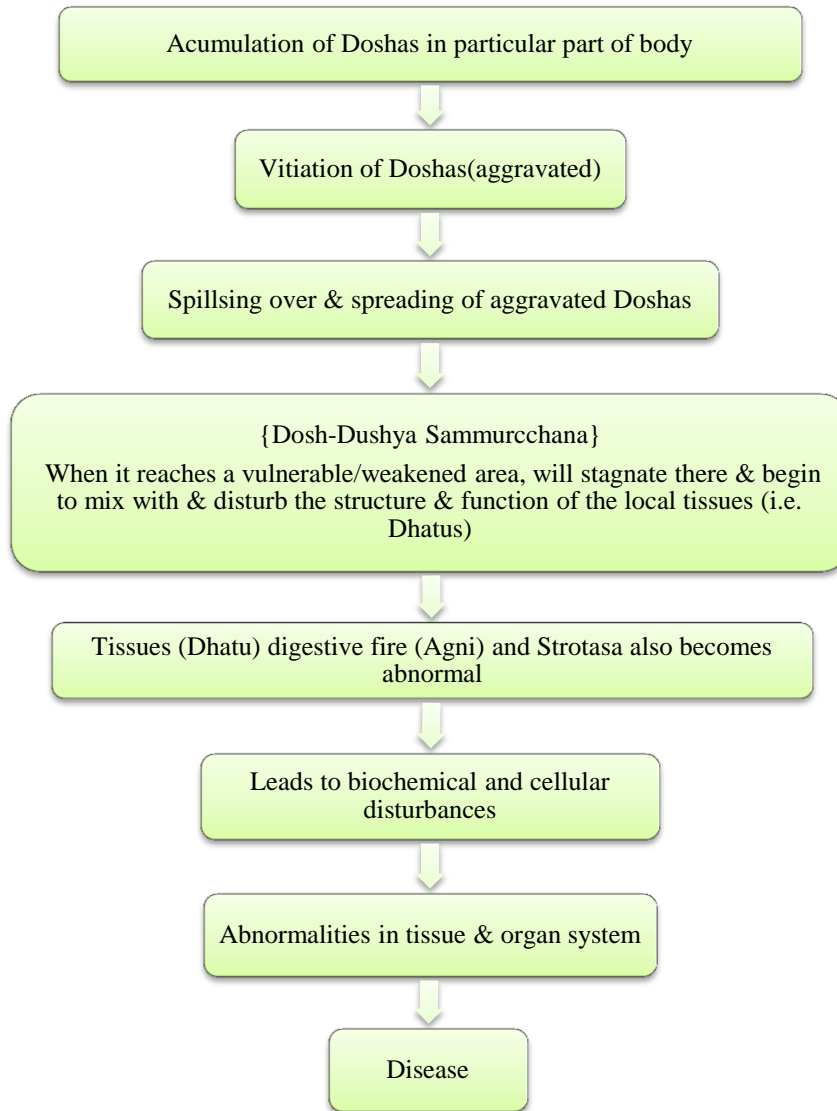
Concept of Samprapti (Pathological course of the disease)

Due to uncorrected exposure for a period of time to the causative factors, the Doshas can become aggravated and begin a sequence of pathological evidences culminating in the creation of a disease state. The term ‘Samprapti’ refers to this sequence of Doshic related pathology triggered by one or more Nidana (causative factors). (Figure 1)

Concept of Shatkriyakala

Sushruta in Sutrasthana described the sequence of pathogenesis in terms of six specific stages, called as Shatkriyakala. It gives us knowledge concerning Vikruti (Pathogenesis) as it progresses along the entire spectrum of disease pre-organic stages to the late, manifestation of disease. The six stages of disease are Sanchaya (accumulation); Prakopa (aggravation); Prasara (spread); Sthanasamsraya (localization); Vyakti (manifestation); Bheda (permanent changes and complications).^[25]

Figure 1: Actual Process of Samprapti



In the absence of exciting cause, these vitiated Doshas at times remain in quiescent stage until they are exposed to favorable time and place. These vitiated Doshas may manifest their effect after getting suitable time and place in presence of exciting factors. Such type of diseases follows Shatkriyakala. However, strongly aggravated Doshas manifest their effects immediately and Shatkriyakala is not followed in such condition.

Signs and symptoms of Doshagati

Chakrapanidutta stated that Doshagati are nothing but different Awastha such as Kshaya, Prakopa, etc.^[8] So signs and symptoms during those Awastha and Doshagati are same.

Table 3: Signs and Symptoms of VataPrakopa^{[26][27]}

Ayurvedic terms	Modern terms
Sramsas (Visramsas)	It means to slip off/to get loose
Vyasa	Sensation of expansion of body parts/continuous expansion/contraction of body parts
Sanga	Adherent /sticking together/attachment – obstruction to normal movement
Bheda	Pain/stinging pain/pain seeing like body parts being torn apart
Sada	Fatigue/lassitude
Harsha	The sensation of internal pain along with shivering
Tarshana	Feeling thirsty
Kampa	Involuntary movements in the body/ a particular body part
Angamarda	Crushing pain in body parts
Chala	Movements of the body
Toda	Sharp, stinging pain
Khara	Changes in the naturally soft structures of the body
Parusha/Rukshatva	Dry sensation even when unctuous objects are touched
Vishada	Disintegrates the unctuous materials in the body
Sushiratva	Hollowness in the bones and joints
Shyavavaranata	Red/slight red /brownish discoloration of the body/of a particular part
Kashayata	Bitter taste in the mouth
Virasatva	Experiencing different tastes in the mouth
Sosha	Emaciation of the tissues/muscles etc.
Supti	Numbness
Stambha	Restrained movement in the body
Vishada	Depressed state of the body
Kanjata	Loss of activity in lower limbs
Karshya	Excessive leanness
Udveshtana	Discomfort, as if being tied up with a rope
Bhanga	Pain with a sensation of being crushed
Aadmana	Distension (ballooning)of abdomen
Sphutanam	Splitting/breaking types of pain
Kantadvamsa	Breaking of voice/hoarseness in speech
Nidranasha	Loss of sleep/disturbed sleep
Vilapana	Improperly articulated sounds
Tadana	Pain, with a feeling of being beaten by baton
Vikshepa	Tossing sensation in the body
Akshepa	Vigorous and uncontrolled body movements
Spandana	Involuntary movement of body parts
Chedana	Pain resembling excision
Vyadha	Pain
Pralapa	Irrelevant speech
Pangu	Lameness
Upaghata	Damage

Table 4: Signs and Symptoms of Pitta Prakopa^{[26][28]}

Ayurvedic terms	Modern terms
Daha	Generalized increase of body temperature/burning sensation in the body
Ushama	Raised temperature
Paka	Process of suppuration
Sweda	Increased perspiration
Kleda	Subtle waste product
Kotha	Excessive rise in kleda resulting in putrefication
Kandu	Itching
Srava	Secretion
Raga	Redness
Putigandha	Bad smell
Visragandha	Smells like putrefied amla (Indian gooseberry)
Dhumaka	Burning smell inside the body
Pralapa	Irrelevant speech
Murcha	Loss of consciousness
Darana	Cleaving like sensation
Visarana	Dissolution
Arati	Discomfort in any position

Table 5: Signs and Symptoms of Kapha prakopa^{[26][29]}

Ayurvedic terms	Modern terms
Shaitya	Subnormal temperature
Sthairyā	Compactness
Utsedha	Elevation of the skin's surface
Gourava	Heaviness
Sneha	Unctuousness
Upadeha	Feeling of coating/ obstruction in energy channels
Bandha	Feeling of being tied up
Tantra	Malfunctioning sense organs
Sthimitha	Lethargy
Katinya	Hardness of soft parts of the body
Apaki	Indigestion
Sotha	Edema
Alasya	Laziness

Table 6: Etiological factors of Shakha to Koshtha Doshagati^[30]

Factors	Explanations
Vridhhi	It means the quantitative increase in dosha which fill up their srotases completely and try to come back to Koshtha.
Vishyandana	It causes liquefaction of Doshas which is helpful when Doshas are in LeenaAwastha, sticky and solid in nature. Liquefaction leads to movement of Dosha towards Koshtha.
Paaka	It means to digest. When Doshas are in SamaAwastha, they stick to the channels and obstruct srotas, and then it is difficult to detach them. Through PachanaDoshas detached from srotas and comes back to Koshtha easily.
SrotomukhaVishodhana	It means dilation of opening of Srotases. In pathology of diseases, Srotases are blocked due to SamaDoshas or other material. After removal of blockage, Dosha returns to Koshtha.
Vatanigraha	It means control of Vayu or pacification of Vayu. It brings back vitiated Vata to its own place.

Symptoms observed during Koshtha to Shakhagati

The movement of Doshas from Koshtha to Shakha occurs in Prasara stage of Shatkriyakala (Sushruta). So Symptoms observed during Koshtha to Shakhagati will be same as that of Prasara stage. (Table 2)

Koshtha to Shakha Gati occurs in Prakopa stage of Rutu Kriyakala (Vagbhata). So symptoms during Koshtha to Shakhagati are same as that of Prakopa stage of RutuKriyakala (three stages of pathogenesis). (Table 3, 4 and 5)

Shakha to Koshtha Doshagati

In Koshthagata Doshagati, Dosha moves from Shakha to Koshtha. This type of Doshagati occurs after treatment of disease i.e. during recovery of disease. (Table 6)

Doshagati during Panchakarma (five process of purification)

Panchakarma is a Shodhana (purification) process Doshagati during Shodhana process is due to movement of vitiated Dosha from Shakha to Koshtha. Charaka explained symptoms of Shakha to Koshthagati during Vamanakarma (process of emesis). Appearance of sweat indicates that Dosha has been liquefied, Lomaharsha (sensation of internal pain along with shivering at the root of hair follicles) indicates movement of Dosha from its Sthana, Adhmana indicates arrival of Dosha in Kukshi (Koshtha) and Horripilation indicates the movement of Dosha in upward tendency.^[31]

Dalhana stated that the aim of Snehana (oleation), Swedana (sudation) is for easy movement of Dosha from Shakha to Koshtha.^[32]

DISCUSSION

Ayurveda is designed for healthy and long lifespan. This aim is fulfilled by its sound and absolute principles. Dosha are basic principle of Ayurveda and Doshagati is very important principle as it plays important role in treatment. So the basic knowledge of Doshagati is important. Doshagati can be clinically assessed with help of signs and symptoms which are helpful in various clinical studies. From this it is sure that the symptoms of Doshagati from Koshtha to Shakha are same as explained in 'Prasara Awastha' of Shatkriyakala (By Sushruta) and 'Prakopa Awastha' of RutuKriyakala (by Vagbhata). Symptoms of Doshagati from Shakha to Koshtha are explained during Shodhana therapy. Normally in the body Doshagati occurs but it does not cause disease. From various symptoms, site of Dosha can be assessed. This is helpful in deciding the line of treatment. If vitiated Dosha are present in Koshtha then Shodhana is selected as line for treatment and if vitiated Dosha are presents in Shakha then Shamana (palliative therapy) is selected as line for treatment. But if Shodhana is necessary, Dosha are first carried to Koshtha and then eliminated by Shodhana.

Knowledge of Doshagati is useful in diagnosis of diseases, e.g. During movement (Doshagati) of Pitta Dosha from Yakruta (Liver) to Rakta (blood stream), yellowish discoloration of skin, eyes, urine and stool is produced. These symptoms are helpful in diagnosis of Bahupitta Kamala (jaundice). In Ruddhpath Kamala (obstructed jaundice), obstruction to the flow of Pitta Dosha occurs due to Shakhagati of Kapha Dosha and leads to Tilapishtanibham Varchas (whitish discoloration of stool). Knowledge of Doshagati is also useful in deciding the line of treatment. In treatment of Bahupitta Kamala, initially Snehana, Swedana is done to carry Pitta Dosha to Koshtha from Shakha then only eliminated by Virechana (Purgation process).

Table 7: Clinical manifestation of Doshagati

Disease	Signs and Symptoms of Koshtato Shakhagati	Signs and Symptoms of Shakha to Koshtagati
Tamaka Shwas	Shayan Shwas Pedit (increase respiration while lying)	Asino Labhate Saukhyam (feeling better while sitting)
Jwar	Santapo Dehendriya manas (fever), Aruchi (tastelessness)	Sarwang-shitangashch (Reduction in fever), Vemalendriya (normalization of senses), Agnidipana (feeling of appetite)
Ruddhaphath Kamala	Haridra Netra mutra twak (yellowish colourisation of eyes, skin, urine), Shweta varchas (white colour of stool)	Prakrut Varna of Netra Mutra twak varchas (appearance of normal colour to eyes, skin, stool, urine), Agnidipana (feeling of appetite)
Udara	Kukshi Adhman Atopa (feeling of fullness & gurgling sounds in abdomen)	Verechanottar Udarstha Alpa Jalsanchiti (reduction in accumulation of fluid in peritoneum), Agnidipana
Pandu	Vinmutra pitatwa (yellow or whitish yellow discolouration of urine, stool, skin), Prekshankuta shotha (Swelling over eyelids), Hruday spandana (palpitation), rukshata (dryness of skin)	Reduction in swelling, discolouration of skin reduced
Suryavartak	Mandamandamakshi bhru vamvividhatechanshumata (Increase in pain at sight of eyes and eyebrows from sunrise to afternoon)	Surya pavruttauvinivartate (Reduction in pain, afternoon to sunset)
Shotha	Utsedham (Swelling), ushma (callor), angavivarnata (discoloration), loma harsha (sensation of internal pain along with shivering at the root of hair follicles), siranamayam (dilatation of blood vessels)	Swelling, discoloration reduced
Dhamaniprati-chaya	Bharma (Vertigo), hrudayaspanandan (palpitation), nidranash (sleeplessness), headache	Vertigo and palpitation reduced
Shitapitta	Utsed (swelling), toda (pain), mandalotpatti (circular patches of swelling), daha burning sensation, araktata (redness)	Swelling and patches reduced
Udard	Kandu (itching), Utsedha (swelling), Daha (burning sensations over patches)	Swelling and etching reduced
Kushtha	Vaivarnya (Discoloration), daha (burning sensation), kandu (itching over skin), swap (loss of sensation at such patches), toda (pain), slight irritation causes wound	Etching reduced, sensations present
Sandhigatvata	Vatpurnadrutisparsha (Fullness of joint space with air), shotha (swelling over joints), prasarnoaakunchanyoapravrutti (restricted movement), vedana (pain during movement)	Swelling and pain over joint reduced, free movements of joints
Pakshaghat	Sira-snayuvishoshya (Atrophy of muscle and tendon), hastapad shaithilya (flaccidity of muscles of hands and legs), chestanivrutti hirujam (restricted and painful movements)	Muscle tone is increased, pain during movements reduced
Kasa	Kasavega (Increase in cough reflux), shuka purna galasyata (fullness of throat with small stones), kanthe kandu (itching of throat), bhojyanamavarodha (obstruction of food)	Cough reflux reduced, etching of throat reduced
Parshwashoon	Parshwashoola (chest pain), suchibirivanistoda (freeking pain over chest), kruchavasi (Difficulty in respiration), kasa (cough), jwara (fever)	Difficulty in respiration reduced, pain, fever and cough reduced

But in Ruddhapatha Kamala, Snehana increases obstruction. So first Lekhana (Scraping) of Kapha is done and then Virechana is implemented. Vega (active stage) of Tamaka Shwasa (Asthma) is due to Koshtha to Shakha Doshagati. At this stage, Utklesha (increase in quantity) of Kapha is done with Kaphakara Aahara Vihara (substances and activities which increases Kapha Dosha) and then Vamana (emesis) is implemented.

Kshaya Gati can be normalized by supplementing Aahara (diet) and Vihara (activities) of similar quality. Similarly Vriddhi Gati can be normalized by supplementing Aahara and Vihara of opposite quality. Line of treatment of Urdhwa and Adha Gati varies according to disease and Dosha involved, e.g. Urdhwaga Raktapitta (bleeding disorders from upper part of body) - Virechana, Urdhwaga Amlapitta (bleeding disorders from upper part of body) - Vamana. (Table 7)

Even though there is diversity in treatment modalities in various diseases they never outrage Santarpana (oversaturation) and Apatarpana (under nutrition) which in turns are again dependent on Doshagati. Oushadha Sevana Kala (time of administration of medicine), Samshodhana Kala (time of administration of Shodhana) is based upon predominance [Vriddhaavastha] of Dosha at particular instant that is Doshagati. Examples are Anannakala (empty stomach) for Kapha Dosha and Vamana in Vasantrutu.

CONCLUSION

From the discussion, it is clear that Doshagati is important for treatment point of view and is only assessed with the help of signs and symptoms. Doshagatis are nothing but different Awastha such as Kshaya, Prakopa. Symptoms of shakhagati are symptoms observed during Prasara stage of Shatkriyakala (by Sushruta) and Prakopa stage

of Rutukriyakala (by Vagbhata). Symptoms of Koshthagati are symptoms observed during recovery of disease. This article is an attempt to collect those symptoms. All those symptoms are helpful in diagnosis and staging of diseases, understanding pathogenesis, deciding proper line of treatment, Oushadha Sevana Kala and Samshodhana Kala. This view gives new direction for further clinical studies.

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