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Review on *Etio*-pathogenesis and diagnostic criteria of The *Vatarakta Roga* w. s. r. to Gouty arthritis.

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Abstract:

Metabolic disorders are increasingly seen in the present era due to unhealthy modification in the diet and life styles. *Vatarakta* is the one of the disease of life style and abnormal metabolism. The *etiopathogenesis* and diagnostic methods of *vatarakata* are explained in Ayurved before thousands of years. The lifestyle and dietary trend has been changed drastically with the course of time due to change in the environment. Change or disturbances of the environment is most often caused by human influence and natural ecological process. So it is needed to review the *etiopathogensis* and the diagnostic criteria of the *vatarakta*. In *vatarakta* most of the variables (signs and symptoms) are nominal and categorical; hence diagnosis is often made by some degree of subjective interpretation of the clinician. To make the reliable, valid and consistent diagnosis of *Vatarakta*, modern investigation like synovial fluid examination, Sr.uric acid etc (objective *paramenters*) must be include in the diagnostic criteria of the *Vatarakta*. Gouty arthritis and Vatarakta has great similarities in regards of *etiopathogenesis* and clinical presentation. This study gives insight into review of *etiopathogenesis* and diagnostic methods of Vatarakta.

Keywords: *Vatarakta*, gout, *etiopathogenesis*, diagnostic criteria

Introduction:

Concepts of diagnosis in Ayurved is unique, it comprises *Nidana* of *dosh-dhatu-mala* imbalance by studying physical and psychological aspects. Diagnosis or *Rog-Rogipariksha* also consists of knowledge of *etio*-pathogenesis and *symptomatology*. *Acharya charaka* has given first place to *Rog-Rogi pariksha* (diagnostic methods) and principles of treatment and drugs are given next place in order of importance. [(1)] So attempt has been made here to review the etiology and diagnostic criteria of the *vatarakta*.

Vatarakta is the illness of *Madhyam marga* where *vata* and *rakta* are afflicted by distinct etiological factor. Acharya charaka, Vagbhata, Madhavkara had explained the *vatarakta* as a *swatantra vyadhi* while *Acharya Sushruta* had described this disease in *vatvyadhi* chapter.

Khuda-Khudavata-Adhyavata-Vatabalasaka are the synonyms of the *vatarakta*. [2] In *vatarakta* initially small joints are affected hence it called as *Khuda* or *Khudavata*. This disease mainly found in rich people having sedentary life style and delicate persons so this disease also called as *Adhyavata. Rakta dushti* becomes more toxic due to *avarna vata* and disease becomes more severe hence it is also called as *Vatabalasaka*.[3]

The clinical presentation of the *vatarakta* is a mixed picture of *vatadushti* and *rakta dushti*. In the regards of the etiological factors and clinical presentation there are outstanding similarities between *Vatarakta* and Gouty arthritis. In this study *etiopathological* comparative study is done between *vatarakta* and Gouty arthritis and attempt has been made to customize the diagnostic criteria of *vatarakta*.

Review of Literature:

Disease of *vatavyadhi* produces morbid changes *Vatarakta* also. *Charaka*, *Ashtang hridaya*, *Ashtang sangraha* has explained *Vatarakta* as separate disease, and *Sushruta* has explained the *vatarakta* in the section of *Vatvyadhi*. *Acharya Sushruta* considered this disease as a *Vatavyadhi*.

***Etiopathogenesis* of *Vatarakta*:**

Historically *Vatarakta* is known as a disease of king or rich people, having uncontrolled dietary habits and sedentary restful life. Diet rich in *lavna, amla, katu rasa*; alkaline, fatty, fried preparations of meat of aquatic or swamp animals; dried ball preparations, oily preparations radishes, *kulattha*, *mash*, *nispava*, various types of leafy vegetables, meat, yoghurt, *asava*, eating incompatible articles of diet, eating before digestion of the meal previously taken. Anger, day sleep and keeping awake during night such unhealthy activities produce the *vatarakta*.[4]

Vatarakta also known as *vatashonita roga* it mainly affects the delicate, obese persons living in a comfort life those who are not following the regime of diet and daily, seasonal activities. [5]

Acharya Sushruta had explained that riding on the elephant, horse, camel and similar animals for long time and hyperacidity producing food articles causes over burning of food, it will results into vitiation of rakta (blood) that subsequently accumulates in the lower limbs due to gravity. Thereafter, the blood is saturated with the vitiated *vayu* because of prominence of that it is called *Vatarakta*. [6] Vata is aggravated by excessive walking and riding on the elephant etc. animal for long time. It makes blood thinner so it accumulates in lower limbs. *Vidahi anna* also helps to accumulate the blood in lower part of the body. *Vata* plays an important role in vitiating the other factors.

Modern aspects of *Vatarakta hetu*:

Lavana rasa is responsible for the sodium and water retention in the body tissue. Excessive consumption of lavana rasa (pasta sauce, instant noodles,

pickles, papad), does not allow water and uric acid to excrete out from body and *hyperurecemia* occurs and it will develops into *vatarakta*. *Hyperuricaemia* is defined as a serum or plasma urate concentration greater than 7.0 mg/dl in mal and 6.0 mg/dl in females. [7] Dietary component like *shaak, Mulaka, kulatha, mansha, nishpava* are *purine* rich which on metabolism converted into monosodium *urates*. Dairy products like *dadhi, takra* are also rich in protein and purine and may produce the hyperuricemia Non vegetarian foods especially *Anoopdeshaja mansa, ambuja mansa* and sea foods are also rich in purine and protein rich can produces hyperuricemia and vatarakta. Fermented alcohol rich drinks or alcohol drink like *sura, asava, souviraka, shukta, arnala* also contain more amount of *purine* hence produces *vatarakta*. Excess ingestion of *Ikshu rasa*, fruit juice, *mishtana* like food items can produces *hyperuricemia* because it has more amount of glucose and fructose. Consumption of *shushka ahara* and low intake of fluid orally reduces water level in the body and produces dehydration. Due to dehydration body could not excrete out the acidic waste material like uric acid and produces the *hyperuricemia*. *Vatarakta* is disease of *sukumara* (delicate people) and the people having sedentary life style, *achankramana* can produces vatarakta.

Causes of hyperuricemia[8]:

	Primary hyperuricemia	Secondary hyperuricemia
Increased uric acid production	Idiopathic 10% *Hypoxanthine guanine *phosphoribosyl transderase*(HGPRT) deficiency *Increased *phosphoribosyl* pyrophosphate (PRPP) *synthetase* activity	*Complete HGPRT deficiency *Glucose 6-phosphatase deficiency **Polycythemia vera* *Granulocytic *leukaemias* *lymphoma myelomas *Chronic hemolytic *anaemia* **Goucher's* disease **Exfoliative* psoriasis
Decreased uric acid excretion	Idiopathic 90%	*Chronic kidney disease, *Nephrogenic* diabetes *insipidus* *Exercise, starvation, *ketoacidosis*, alcohol. *Drugs- Diuretics, aspirin, *pyrazinamide*, Cyclosporine, *ethambutol* *Disease- Hyperparathyroidism, *myxoedema*, down's syndrome, lead nephropathy, *sarcoidosis*.

***Prodermal* (*Purvarupa*) clinical features:**

Following are the *prodromal* features that may found in *vatarakta*. Excessive

or minimum or no sweating, blackish discolored skin, loss of sensation, sever pain on slight hurting, lassitude weakness in joints, depression, appearance of blisters on the skin, pricking-breaking pain, heaviness, numbness, itching in the knee, calf, thighs, pelvis, scapular area, hands, legs, and joints. Pain in joints persists and disappears alternatively. Some time discoloring patches appears on the skin. [9]

Clinical features (Rupa):

Vatarakta is associated with different *doshas*, following are the different clinical features of different types of the single *dosha vatarakta*. With the predominance of two *doshas* or *tridoshs* mixed symptoms of the concerned *doshas* are present.

The site where *vatarakta* is manifested are hands, feet, fingers including toes and all joint. In the beginning, the hands and the feet are affected. From this base it spreads all over the body parts because of the subtle (*sookshma*) pervasive nature of *vata* and *rakta*.

The vatarakta starts from the great toe or ankle joint (*padamul* or *gulfa*), Sometimes it starts from thumb (*Hstha mula*) and gradually spreads in the body like rat poison (Rodents). *Vatarakta* spreads in the body slowly hence *Acharya Sushruta* compared this slow spreading nature with akhuvish (rat poison). [10]

***Dosh* wise Symptoms *Vatarakta*(*Vishesh Rupa*):** [11,12,13]

Symptoms/ Types	*Vatadhikya*	*Raktadhikya*	*Pittadhikya*	*Kaphadhikya*
Pain	Severe Pulsating, tearing	Pricking, tingling	Burning, pain - tenderness	Mild pain with heaviness
Shotha	*Shotha* with *Rukshta*	Moist discharge	Swelling, moderate to severe warmness due to pus inside	Moist and cold
Discoloration	Black, bluish	Coppery red	Redness	--
Specific	Stiffness, tremor, numbness. Contractures and pain at fingers	Itching	Delusion, sweating, fainting, toxicity, thirst	It's felt as if covered with wet cloths, insensitive to touch, oily, cold. Itching
Anupshaya	*Anupshaya* by Cold	*Anupshaya* by oily or dry medication or massage	--	---

Types of *Vatarakta*: According to *Acharya Charaka* there are two different types of *Vataratkta*, *Uttan Vatarakta & Gambhir Vatarakta*. If this disease is rooted in the skin and muscle (*twak-mans*) this is called as *Uttan Vatrakta* while *vatarakta* originated from the deeper strata of the body (rakta, meda etc) is called as *Gambhir vatarakta*.([14]) On other hand *Acharya Sushruta* states that the initial stage of this disease is called *Uttan vatrakta* and *Gambhir Vatarakta* is to be considered as the advanced stage of the *Vatarakta*.([15])

***Vatarakta* and Gout**: On the basis of signs and symptoms *vatarakta* can be correlated to gout to a greater extent. Gout is chronic inflammatory disease results from deposition of mono sodium *urates* crystals in joints and connective tissues secondary to *hyperuricemia* and clinically presented as acute *synovitis*, chronic erosive arthritis, tophi, *nephrolithiasis*, nephritis etc. Only about tenth of patients of the *hyperuricemia* exhibit with gout. *Hyperuricemia* may be incidental finding and may never lead to gout. Conversely serum uric acid level may not be elevated during acute gouty arthritis. Gout is rare in children and pre menopausal females. Most of the patients found in males of age group between 40 to 50yrs. ([16])

Uric acid is waste product of *purine metabolisim*. It is a component of nucleic acid. *hyperuricemia* can be occurs by two ways either by increased production in body or by impairment of it's excretion through urine by kidney. Shellfish, anchovies, red meat, organ meat are the *purine* rich non vegetarian food articles. More amount of *purine* is also present in high fructose food articles, corn syrup, beverages etc. therefore increased consumption of *purine* can leads hyperuricemia and gout. Decreased clearance of uric acid occurs due to dehydration, alcohol intake, less fluid intake orally. Purine will converts to uric acid, uric acid will converts to monosodium *urates* (MSU). These are the needle like sharp crystals that are get deposited in to the synovial fluid present in the joint and produces the red hot swollen joint due to inflammatory response. Due to unknown cause first metatarsal joint of the big toe firstly affected in majority of cases as explained by *Acharya Charaka*. [17]

Pseudo Gout and *Vatarakta*: There are also some clinical similarities in Vatarakta and Pseudo Gaout, but they are *etiopathologically* different disease. one is life style disorder while another is hereditary, idiopathic, associated with aging or secondary to hyperparathyroidism, *hemochromatosis*, *hypophosphatasia*, *hypomagnesemia*, *hypothyroidism*, joint trauma etc. In pseudo gout there is deposition of calcium pyrophosphate deposition (CPPD), *Pseudogout* occurs in 25% of patient with CPPD. It is clinically presented as Arthritis, Knee is frequently involved, but other joints may affected, involved joint *erythematous*, swollen, warm and pain full, most patients have evidence of *chondrocalcinosis*.([18])

Clinical Evaluation Gout and Pseudo Gout:

Synovial fluid analysis-demonstration of Characteristic needle-shaped Monosodium *Urate* crystals is suggestive of gout while demonstration of calcium

pyrophosphate dehydrate crystals (appearing as a short blunt rods, rhomboids and cuboids) suggestive of CPPD i.e. pseudo gout.

- Serum Uric acid –Normal levels do not rule out gout.
- Urine Uric acid –Excretion of more than 800 mg/dl on regular diet without drugs
- Gram stain and culture- to rule out infectious arthritis
- Screening for risk factors –Renal insufficiency, *hyperlipidemia*, diabetes.
- Joint x Ray – may demonstrate erosions late in disease gout while *chodrocalcinosis* and degenerative changes in Pseudo gout.
- USG – Abdomen for Calculus in excretory pathway.

We can use of above mentioned modern pathological and special investigations for diagnosis and differential diagnosis of the vatarakta (gout).[19]

Diagnostic Criteria of vatarakta:

Diagnosis of *vatarakta* should be made on the basis of history (hetu and *purvarupa*) clinical features(Rupa) and some pathological investigations. *Vatarakta* is easy to diagnose when it is classically present in the patient but when there is atypical presentation of the disease it is difficult to diagnosis, So we needs to review and customize the diagnostic criteria of *vatarakta*.

While diagnosing a case of *Vatarakta* there should be history of *hetusevana* of *Vataprakopak hetu* and *rakta dushti hetu* which are explained in *Vatarakta*. In case of *purvarupa* there should be history of minimum one *purvarupa* related to *vataprakop* and minimum one *purvarupa* related to *raktadushti.Vatarakta* clinically present with inflammatory joint condition (shotha, Shoola) due to *vataprakopa* and *Pidodgama*, *vaivarnya*, *Kandu*, *Mandloutpatti* due to *rakta dushti* hence there should be any one of the feature of *Vataprakopa* (*Shotha –shoola* etc) along with minimum one *lakshan* of *raktadushti* should be present which are explained in *vatarakta*.

We have seen that in pathogenesis of *vatarakta*, If there is *hyperuricemia* is present later on which causes deposition sharp fine needle like crystals of monosodium urates in joint fluid which produces the inflammation of joint. *Vatarakta* (gout) is not a infectious disease hence there is negative joint fluid culture for organisms. Hence in the investigations among four criteria any two should be present. In this way we can diagnosis the *vatarakta vyadhi* with the help of modern investigations

Reviewed Diagnostic Criteria for Vatarakta.

History	*Purvarupa*	*Rupa*	Lab Investigations
01.Vataprakopa Hetu sevana *2.Raktadushti Hetu sevana*	1.Asweda/ *atisweda* 2. *Kandu* 3.*Vaivarnya* *4.Mandaloutpatti* *5.Sandhi shaithilya* *6.Sandhi shool Bedovat todovat* *7.Sparshadnyatva* *8.Kshate-atiruka*	1.Clinical features of *vata* vitiation (*Shula, Shoth* etc.) 2.Clinical features of *rakta dushti (Pidodgamam, Vaivarny, Kandu, Madalo utapatti etc.)*	1. Raised serum uric acid level 2. Presence of crystals of mono sodium *urates* in the synovial fluid of the joint 3. Joint fluid culture during active disease negative for infectious organism. 4. Urine Uric acid-excretion of >800mg/dl on regular diet without drugs.
Compulsory two criteria	Compulsory any one of *purvarupa* related to *vatdosh* along with any one of *purvarupa* related to *Raktadushti*	Compulsory any one of Clinical feature (*Rupa*) related to *vat dosh* along with any one of Clinical feature related to *Raktadushti*	Any two of the criteria

Discussion:

Ayurvdiac diagnosis is totally depends upon the *Rogi Pariksha* and *Rogpariksha Pariksha*. For *Rogi Pariksha* we use the different types of the clinical examinations while for examining the Roga we use the *Nidan Panchaka*. Thus our diagnosis should be based on the history, clinical examination and investigations. While diagnosing the *Vatarakta* history (*hetu*) of patient should be taken. Excessive consumption of different types of non vegetarian food items, high protein diet, diet rich in *lavana* rasa(pickles, *papad*, instant food), excessive consumption of alcohol, dairy products, *virudhashan, adhyashan*, anger, day sleep, awakeners in night aobesity are causative factors for *Vatarakta*. Starvation, emotional stress, anger are the trigger factors of vatarakta. When there is atypical presentation of *vatarakta*, customized diagnostic criteria should used. In *samprapti* of *vatarakta vata dosaha prapoka and rakta dushti* is occurs hence there must be minimum one hetu/one *purvarupa/* one *rupa* which is related to *vataprakop* and minimum one hetu/ one purvarupa/ one rupa related with *rakta dushti* must be present. As Vatarakta is metabolic disease, we must use the modern investigations like serum uric acid, urine uric acid, synovial fluid examinations to find out the monosodium *urates*, synovial fluid culture. Any two of the above mentioned investigation will confirms the diagnosis of *vatarakta*.

Conclusion:

Vatarakta is the life style related metabolic disease which have great similarities with gout regarding etiology and clinical presentation. Dietary etiological factors are protein and *purin* rich food items which produces the *vatarakta* with or without *hyperuricemia*. Sedentary life style, non vegetarian diet, alcohol, obesity are common in the present era hence number of patients of this disease are increasing day by day. By avoiding the food items which are rich in puine, exercise *vatarakta* can be avoidable. Diagnosis of *vatarakta* should be made on the basis of history, clinical examination and investigations. In history and there should one hetu, one, *purvarupa*, one *rupa* must be present which should be related to *vata prakopa* and one *hetu*, one, *purvarupa*, one *rupa* must be present which should be related to rakta dushti. Any two of following investigation should be in supportive to *vatarakta*. Synovial fluid examination for sodium *urates* , synovial fluid culture, biochemical investigation like serum uric acid, urine uric acid. In this way we can make reliable, valid and consistent diagnosis of *vatarakta*.

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