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A UNIDIMENSIONAL APPRAISAL OF THE PRAGMATIC APPLICATION OF *JALAPRATARAṆA* AS A *HETU-VYADHI VIPAREETARTHAKARI VIHARA UPASHAYA* IN *URUSTHAMBHA* W.S.R. TO THERAPEUTIC IMPACT OF SWIMMING IN THE MANAGEMENT OF LIPID MYOPATHIES

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Abstract

Roga pareeksha and *Rogi pareeksha* constitute the two primary diagnostic components of Ayurveda. *Nidana panchaka*—comprising *Hetu*, *Purvaroopa*, *Roopa*, *Upashaya-Anupashaya* & *Samprapti* - serves as a comprehensive diagnostic framework for understanding the modalities of *roga pareeksha*. Among these, *Upashaya* and *Anupashaya* exemplify a trial-and-error approach applied prior to definitive diagnosis and treatment selection. The *Upashaya* method is particularly valuable when clinical symptoms overlap, aiding in differential diagnosis through therapeutic testing. Administration of *Ahara*, *Vihara*, or *Aushadha* that acts contrary to the *Hetu*, *Vyadhi*, or *Hetu-Vyadhi* is termed *Vipareeta upashaya*, whereas the approach that aligns with them is known as *Vipareetartakari upashaya*. Though the concept of *vipareetarthakari upashaya* appears complex, our *Acharyas* have provided clear rationales to justify its therapeutic relevance. A classical example is the advocacy of *jalapratarana* in *urusthambha*, an application of *hetu-vyadhi vipareetarthakari vihara upashaya*. *Urusthambha* is a disorder best managed through Ayurvedic *shamana aushadhis*. However, *jalachankramana chikitsa* as described by *Acharya Charaka* proves particularly effective by facilitating the *vilayana* of accumulated *meda dhatu* in the *uru pradesha*, thereby restoring the normal function of *avruta vata*. Pathologically, *Urusthambha* can be correlated with lipid myopathies, wherein adiponectin and endothelin-1 play crucial roles. Adiponectin exerts a protective effect by promoting fatty acid oxidation and reducing lipid accumulation in muscle cells, suggesting its potential as a novel therapeutic target for myopathies. Interestingly, studies indicate that cold-water swimming elevates adiponectin levels, thereby imparting beneficial effects on the musculoskeletal system. Moreover, combined interventions such as whole-body cryotherapy and cold-water swimming are known to elevate HDL levels while reducing LDL and total cholesterol. Experimental studies on animal models further support the beneficial effects of swimming exercise in mitigating myopathies via reducing ET-1, enhancing vascular function and decreasing ET-1 mediated vasoconstrictor tone.

Keywords: *Upashaya*, *Hetu-vyadhi vipareetarthakari vihara upashaya*, *Jalapratarana*, *Urusthambha*, Swimming exercise, Lipid myopathy

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Introduction

Upashaya is *sukhanubandhi* that which creates happiness/comfort on patient[1]. And *upashaya* is *satmya*[2]. It is a unique tool among *nidana panchaka* to detect where the *vyadhi* reflects as *gooda linga*[3]. It is of two types i.e., *vipareeta* and *vipareetarthakari*. Administration of *ahara*, *vihara* or *aushadha* which is contrary

to *hetu*/*vyadhi*/*hetu-vyadhi* is denoted as *vipareeta vidhi* of *upashaya*. And the method adopted which is not actually contrary to *hetu*/*vyadhi*/*hetu-vyadhi* defines *vipareetarthakari vidhi* of *upashaya*[4]. Food/regimen/medicine which acts against cause/disease/both cause and disease, providing relief despite being contrary to the known cause or characteristics of disease is expressed as *vipareetarthakari* type of *upashaya*. Nine types of *vipareetarthakari upashaya* are enlisted in aspects of *ahara*/*vihara*/*aushadha* with examples under *nidana panchaka* in *samhitas*. Description on *Urusthambha* has been given in *Chikitsa sthana* of *Charaka Samhita* and *Susruta Samhita*, *Nidana sthana* of *Ashtanga Hrudaya and Madhava Nidana* respectively. *Acharya Charaka* has explained *urusthambha vyadhi* separately in *urusthambha chikitsa adhyaya* and *Acharya Susruta* included it in *Maha vatavyadhi chikitsa adhyaya.* He named this *vyadhi* as *Aadyavata. Acharaya Vagbhata* has mentioned *Urusthambha* in *Vatavyadhi nidana adhyaya*[5] and *Acharya Madhavakara* mentioned it in *Urusthambha nidanam adhyaya*[6]. *Urusthambha* and *kapha-medo avrita vata* are used each other synonymously[7]. *Urusthambha* is characterized by stiffness, coldness, loss of control and pain over thigh region[8]. Generally, *panchakarma* procedures are not advocated to treat this condition. There are some modern perspectives over *urusthambha* and symptomatically *urusthambha* can be likely correlated with lipid myopathy as it shows some similarity in clinical features. Lipid myopathies are heterogeneous group of genetic disorders. Skeletal muscle weakness, myalgia, extreme fatigue and cardiomyopathy are some of the major clinical presentations of lipid myopathy. It arises due to abnormal lipid storage in multiple body organs, typically over muscles and impairs muscle functions[9]. *Jalapratarana* is indicated as *hetu-vyadhi vipareetarthakari vihara upashaya* in *urusthambha*[10]. Concerning into it, *urusthambha* develops with vitiation of *vata dosha*, *kapha dosha* and *medho dhatu* primarily. Hence, swimming in cold water may be an antagonistic thing in this situation. As *vipareetarthakari upashaya* prepossess a distinct approach, acharyas had already interpreted the reasons behind it. Research articles show that swimming/aqua therapy enhances the betterment of lipid myopathy related conditions. Thus, this paper endeavors to explore the rationale behind the therapeutic use of swimming in managing lipid myopathy conditions, interpreting *Jalapratarana* in *Urusthambha* as a classical illustration of *Hetu-Vyadhi Vipareetartakari Vihara Upashaya*.

Materials & Methods

Review of literature from *samhitas* with commentaries that appraises concept of *upashaya*, *Urusthambha* corroborating with contemporary analysis upon effect of swimming in management of lipid myopathies through scientific articles.

Table.1 – Details of Samhitas

Sl. No.	Samhita	Sthana	Vyakhya
01	Charaka Samhita	Chikitsa sthana	Ayurveda Dipika commentary of Chakrapanidatta
02	Charaka Samhita	Nidana sthana	Ayurveda Dipika commentary of Chakrapanidatta
03	Susruta Samhita	Chikitsa sthana	Nibandhasangraha commentary of Sri Dalhanacharya
04	Ashtanga Hrudaya	Nidana sthana	Sarvangasundara commentary of Arunadatta & Ayurveda rasayana commentary of Hemadri
05	Madhava nidana	--	Madhukosa commentary by Vijayaraksita & Srikanthadatta

Discussion

To commence, outlining the *samprapti* of *urusthambha* would be most appropriate at this juncture to facilitate a clearer understanding of the forthcoming discussion. Indulging in *ukta nidana* of *urusthambha* causes *ama* formation due to *agni mandya*. Further, it makes *avarodha* over *vata dosha* as a result of combination of *ama* and *medas*. Due to the amalgamation of *ama* and *medas*, it moves downwards because of it's *guru guna*. Later *sthanasamshraya* occurs at *uru pradesha* followed by manifestation of *supti*, *kampa*, *vedana*, *sphurana* and other symptoms of *urusthambha*[11]. *Acharya Susruta* opines involvement of two types

of *avarana* in *samprapti* of *urusthambha* viz, *kaphavruta vata* and *medavruta vata*. He further named that *urusthambha* as *aadyavata*, which looks similar to *medavruta vata*. Due to *kapha prakopa*, *sanga* occurs in *koshta* and *avarana* happens to *vata* by *kapha* and *medas*. It results in v*imarga gamana* of *dosha*s leading to *sthanasamshraya* in *uru pradesha*[12]. *Sheetata, gouravata, shopha, toda, shoola, suptata* are the symptoms of *kaphavruta vatajanya urusthambha*, whereas *aruchi, chala, snigdha, mridu, sheeta, shopha* are produced in *medavruta vatajanya urusthambha*[13].

Acharya Susruta designates it as *aadyavata*, considering that the high-calorie and rich dietary patterns mentioned in the *nidana* of *urusthambha* were typically accessible to affluent people in accordance with the societal norms of that era. *Samprapti* of *urusthambha* resembles with atherogenesis. Dietary components under *aharaja nidana* of *urusthambha* propounds high caloric or atherogenic diet pattern[14]. Metabolic syndromes are the most alarming day-to-day health concerns. Excessive intake of fatty food stuffs is higher in higher social classes[15]. This may accelerate risk of atherosclerosis and metabolic syndrome. *Panchakarma* is not commonly recommended in management of *urusthambha*. So, exploring the clinical utility of *upashaya* in *urusthambha* provides valuable insight, facilitating both symptomatic management and differentiation of similar pathological conditions through *vyavachedaka nidana*. *Upashaya* is *chikitsa*[16].

Sheetajala pratarana is indicated in *urusthambha* as a *hetu-vyadhi vipareetarthakari vihara upashaya*. *Jalabhiramana* is mentioned in *urusthambha chikitsa* also[17]. Owing to this action, the condition is reasonably anticipated to aggravate at this phase of its progression. Because *sheetajala* may aggravate *kapha dosha* and do *medo dushti* because "*samanyam vriddhi kaaranam*". *Kaphavruta* and *medavruta* conditions already exist in *samprapti* of *urusthambha*. Principle of *vipareetarthakari upashaya* acts on *tatartakari* effect. While swimming, human body produces heat and this heat cannot get disperse from the body because of surrounding cold water. This generated heat remains inside the body to dissociate *kapha* from the adhered tissues resulting in it's alleviation[18]. Thus, application of *upashaya* contributes to symptomatic relief and provides a foundation for the selection of subsequent treatment modalities.

Myopathies are neuromuscular disorders of skeletal muscles characterized by muscular degeneration and weakness. Inherited myopathies and non-inherited/acquired myopathies are the two main classifications[19]. Lipid myopathies account to group of muscular diseases that arising due to enzymatic errors of lipid metabolism. Progressive or episodic asthenia along with rhabdomyolysis is the typical clinical symptom of lipid myopathy[20]. Entrance of fatty acids into cytoplasm through proteins of sarcoplasmic membrane, storage or breakdown of fatty acids of lipid droplets, transportation of fatty acids into mitochondria from external to internal mitochondrial membrane and fatty acids release in mitochondria matrix to enter in beta-oxidation are the major steps in metabolization of fatty acids.

Any alterations in these steps can cause lipid myopathy which characterized by fluctuant or fixed weakness, rhabdomyolysis, myoglobinuria, myalgia, eventually associated to muscle atrophy and involvement of other organs (liver, heart and central nervous system)[21]. Adiponectin and endothelin-1 play key role in pathogenesis of myopathies. Adiponectin, a hormone secretes by fat tissue regulates metabolism, particularly glucose and lipid levels, and in reducing inflammation and insulin resistance. Physical exercise is a primary driver for increased adiponectin production[22]. Medical researches point out myopathies are characterized by decreased concentration of plasma adiponectin and replenishing of adiponectin induces beneficial effects in the diseased muscles[23].

Endothelin plays a complex and multifaceted role in the pathology of myopathy. Endothelin-1 (ET-1) is a potent vasoconstrictor peptide. This can lead to reduced blood flow to skeletal muscle, potentially causing ischemia and contributing to muscle damage[24]. Increased circulating levels of ET-1 is noted with aging and is associated with muscular fibrosis and decline of strength[25]. A concurrent controversy exists regarding the role of exercise in metabolic myopathies, as it may worsen symptoms such as fatigue, myalgia, cramps, and contractures. In contrast, lipid metabolism disorders often produce symptoms only after sustained, moderate-intensity exercise like jogging or swimming. Nonetheless, alternative studies offer contradictory findings, adding to this uncertainty[26].

Experimental studies show that cold water swimming appraises raised adiponectin level and thereby inducing a positive effect on the musculoskeletal system. While body gets exposed with cold water, it induces muscle contraction and reversing the effects of metabolic diseases over body. Whole body cryotherapy and cold-water swimming combinedly increase the HDL level and decreasing LDL, total

cholesterol therewith[27]. Cold exposure to body forwards with an effective lipid metabolism and brown adipose tissue plays a major role in metabolism of total glycerides. Research entitled into inflammatory response in the adipose tissue of mice delineates brown adipose tissue generates heat by breaking down total glycerides stored in intercellular lipid droplets during exposure to low temperature to maintain a stable temperature[28]. Adiponectin lowers the level of circulating lipids[29].

Clinical research works on animal models implicate beneficiary effect of swimming exercise in management of myopathy conditions as well as other metabolic disorders. An experimental animal study consisting of two groups of mice viz., Normal Fat Diet (NFD) group and High Fat Diet (HFD) group respectively has shown that short-term forced swimming stress can impact on serum adiponectin and Endothelin-1 levels[30]. Reduced ET-1 levels followed by swimming exercise in both diet groups can enhance better vascular functioning and it bestows in lowering ET-1-mediated vasoconstrictor tone[31].

Conclusion

Upashaya–Anupashaya is often regarded as an empirical approach, wherein its applicability as a treatment strategy may or may not be established in advance. The *vipareeta vidhi* of *upashaya* represents an antagonistic principle, where the *tatarthakari* effect forms the basis of *vipareetarthakari upashaya*. Ayurveda provides rational justification for each of it's profound concepts as described in the *Samhitas*, and these principles are further reinforced by contemporary research that validates classical doctrines. Similarly, nine types of *vipareetarthakari upashaya* have been conceptually illustrated with appropriate examples, while the pursuit of precise scientific explanations remains essential to explore and substantiate the yet-unrevealed dimensions of this science. It would be preferable to pursue scientific delineation of the rationale underlying such concepts through future research topics, as this would contribute to the standardization of classical treatment protocols. Moreover, titles of this nature would be more novel and could inspire scholars to explore the vast emporium of traditional knowledge in greater depth.

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