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Research Article

AN AYURVEDIC PERSPECTIVE OF FATIGUE AFTER STROKE (*PAKSHAGHATA*)

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ABSTRACT

Fatigue after stroke (*Pakshaghata*) is a common complaint but still an unexplored and neglected condition. Fatigue often manifests as lack of physical and mental energy. It is an important cause of long term morbidity and has negative impact on functional recovery. In modern aspect the mechanism of fatigue after stroke is not well understood and it may be associated with a number of psychosomatic factors. The aim of this critical review is to provide a comprehensive Ayurvedic knowledge from the literature concerning the synonyms, definition, different descriptions, contributing factors of fatigue after stroke (*Pakshaghata*) and its relationship to psychosomatic factors. The terms *Ayasa*, *Shrama*, *Klama* resemble fatigue. The etiology of fatigue after stroke (*Pakshaghata*) seems to be multi-factorial, such as *Pakshaghata* itself (due to vitiated *Vata Dosha*), vitiated *Sronita* (blood), *Ojo Dusti* (disorder of *Ojas*), *Anidratha* (insomnia), emotional changes like *kopa* (agitation), *Shoka* (worry) and *Addyanam* (anxiety). These factors may contribute to manifestation of *Ayasa*, *Shrama* and *Klama* (fatigue). Pathological process of *Margavarana* (occlusion of *Srotas*) or *Dhatukshaya* (depletion of *Dhatus*) leads to manifestation of both *Pakshaghata* and fatigue. Due to fatigue (*Shrama*), complications like *Hrdroga* (heart diseases) and *Sronita Dusti* (vitiation of blood) may develop and having a negative impact on functional recovery. Effective treatments are still lacking and in-depth understanding of Ayurvedic literature is necessary to develop a proper intervention for fatigue after stroke (*Pakshaghata*).

Keywords: Fatigue after stroke, *Ayasa*, *Shrama*, *Klama*, *Vata Vyadhi* and *Pakshaghata*.

INTRODUCTION

Stroke is the major cause of adult disability in the world¹. Stroke is defined as a syndrome of rapid onset of cerebral deficit (usually focal) lasting more than 24 hours or leading to death, with no cause apparent other than a vascular one². Most frequent outcome of stroke is hemiplegia and it can be manifestation either from an ischemic or a hemorrhagic pathological process.

According to sign and symptoms, *Pakshaghata* in Ayurveda can be correlated with stroke specially hemiplegia in modern medicine. *Acharya Charaka* mentioned *Pakshaghata* under *Nanatmaja Vata Vikaras*³ and *Acharya Sushruta* mentioned it under *Ashta Mahagada*⁴. According to Ayurveda *Pakshaghata* is occurred mainly due to vitiation of *Vata Dosha* and it may be associated with *Pitta* or *Kapha Dosha*⁵. According to *Acharya Vagbhata*, vitiated *Vata Dosha* affects one half of the body causes dryness of *Sira* (veins) and *Snayu* (tendons) which leads to *Pakshaghata*⁶. *Vama* or *Dakshina Cheshtanivriti* (motor impairment of either left side or right side) is the main cardinal feature of *Pakshaghata* (stroke) and

it can be manifestation due to the pathogenesis of *Margavarana* (occlusion of channels) or *Dhatukshaya* (depletion of *Dhatus*)⁷.

In addition to motor impairment, recently researchers have become increasingly interested in one of the most common but neglect issue which is known as fatigue after stroke. Fatigue after stroke is defined as a feeling of lack of energy, weariness, and aversion to effort and is usually not ameliorated by rest⁸. Patients experience fatigue as “physical tiredness” or “mental tiredness”. Researchers report that prevalence rate of fatigue after stroke is up to 70 % and these percentages do not seem to decline in the chronic stage⁹. Furthermore, fatigue after stroke appears to be related to long term morbidity and it influence to slow down the recovery process. In Ayurvedic aspect the terms *Ayasa*, *Srama*, *Klama* resembles fatigue.

However, the pathogenesis of fatigue after stroke is still poorly understood and effective treatments are still lacking. The mechanisms leading to fatigue after stroke are still unclear and its causes are believed to be multi factorial. Although fatigue is a common complaint after stroke, relatively in

Ayurvedic aspect little is known about how the fatigue after stroke (*Pakshaghata*) is experienced and what its related factors are. An in depth understanding is necessary to develop effective treatment. The aim of this critical review is to provide a comprehensive Ayurvedic knowledge from the literature concerning the synonyms, definition, different descriptions, contributing factors to the fatigue after stroke (*Pakshaghata*) and its relationship to psycho somatic factors.

MATERIALS AND METHODS

For this conceptual study the available literatures were collected through Ayurvedic authentic text mainly *Charaka Samhitha*, *Susrutha Samhitha*, *Astanga Samgraha*, *Astanga Hradaya*, *Bhava Prakasha*, *Madhava Nidana*, *Vangasena Samhita*, *Bhela Samhita* and *Kasyapa Samhita*, with their respective commentaries, various books, articles and online data base.

Review of literature

Synonyms

The terms *Ayasa*, *Shrama*, *Klama* can be use as synonyms of fatigue. Specially the term *Klama* contribution to mental fatigue.

Definition of *Klama* (Mental fatigue)

Klama is defined as feeling of tiredness without exertion and dyspnea obstructing perception of sense objects¹⁰.

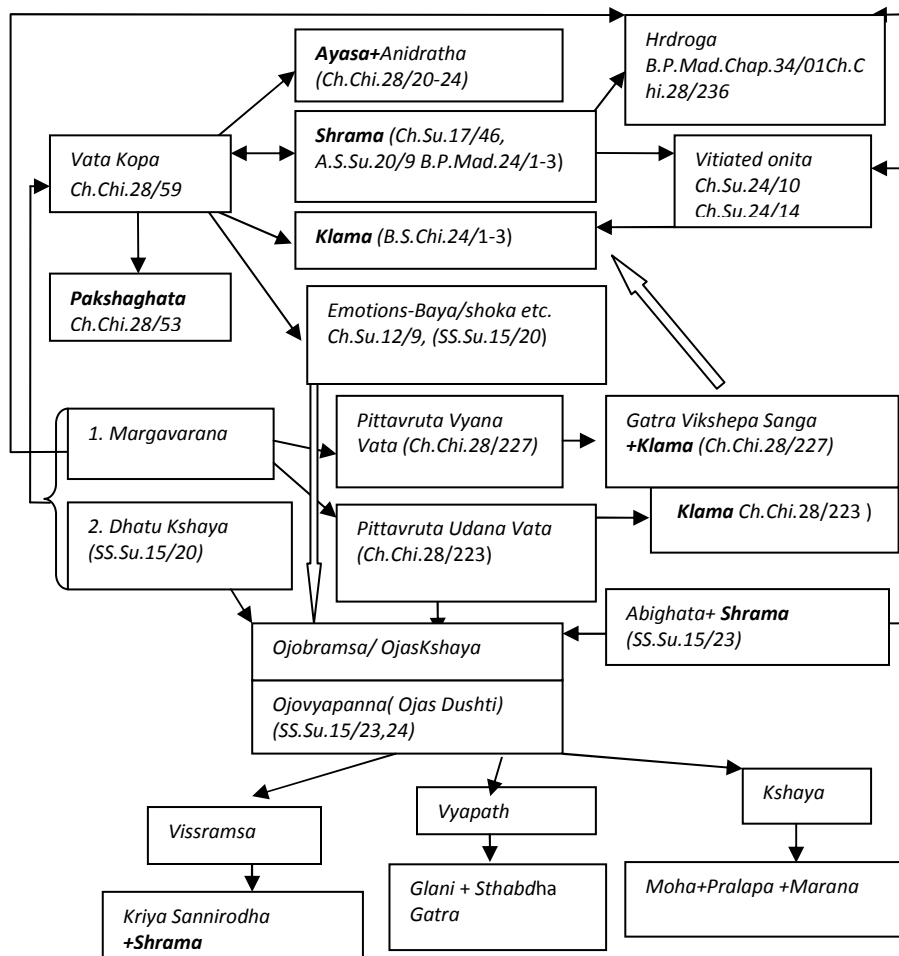
Different description of *Ayasa* and *Shrama*

Acharya Charaka mentioned *Ayasa* (fatigue) is the unhealthiest regime among the most unwholesome regimen¹¹. In *Charaka Chikitsa Sthana* mentioned that *Ayasa* is one of the *Lakshana* (symptom) manifestations due to the vitiation of *Vata Dosha*¹² and its *Sutra Sthana* mentioned when *Kapha* is in the state of diminution, aggravated *Vata* with *Pitta* produce *Shrama* (fatigue) and weakness¹³. *Acharya Charaka* also mentioned that aggravated *Vayu* in *Mamsa* and *Medas* (mussel and fat tissue) gives rise to excessive *Shrama* (fatigue) with pain¹⁴. In *Astanga Samgraha* and *Kashyapa Samhitha* considered *Shrama* (fatigue) as *Roga* (disease) and its mentioned under 80 type of *Vata Vyadhi*^{15,16}. According to *Acharya Sushruta Shrama* (fatigue) is manifestation due to *Ojas Visramsra* (displacement of *Ojas*)¹⁷.

Different description of *Klama* (mental fatigue)

In *Bela Samhita* *klama* is mention under 80 type of *Vata Vyadhi*¹⁸. *Acharya Charaka*, *Acharya Susruta* and *Acharya Vangasena* mentioned that *Klama* is manifestation due to *Margavarana* (occlusion of *Srotas*) and it is mentioned as when *Udana Vata Avarana* by *Pitta*^{19,20,21} and *Vyana Vata Avarana* by *Pitta*^{22,23,24} leads to *Klama* (mental fatigue). But *Charaka Samhitha Sutrasthana* the word *Klama* mentioned under *Dushta Sronita Roga* (disease cause by visited blood)²⁵.

Factors contribution to the fatigue after stroke (*Pakshaghata*) and its relationship to psycho somatic factors (Figure 1)



Pakshaghata itself contribution to fatigue due to vitiated Vata Dosha

Ayasa is one of the symptoms of vitiated *Vata Dosha* and *Shrama* and *Klama* are mentioned as *Roga* (disease) under 80 types of *Vata Vyadhi*. It implies that *Shrama* and *Klama* are manifested due to the vitiation of *Vata Dosha*. *Margavarana* (occlusion of *Srotas*) and *Dhatukshaya* (depletion of *Dhatu*) are the basic pathogenesis of *Vata Vyadhi* and *Avarana* is evident in pathogenesis of *Pakshaghata*. Hence the knowledge of *Avarana* is important to understanding the fatigue after stroke (*Pakshaghata*). *Acharyas* mentions that when *Udana Vata* and *Vyana Vata Avarana* (occluded) by *Pitta* leads to *Klama* (mental fatigue).

Motor deficit (*Chesta Nivruththi*) is the main outcome of *Pakshaghata* and it also can be manifested with *Achetana* or *Vichetana* (loss of sensation), *Hasta Pada Sankocha* (Rigidity), *Sira Snayu Vishosha* (Spasticity), *Ruja* (Pain), *Vakstambha* (*Aphasia* or *Dysarthria*), *Sandhibandha Vimoksha* (Subluxation of joints), and *Murchchha* (Loss of consciousness). Motor impairment (*Chesta Nivruththi*) is one of the contributing factor of fatigue after stroke. Due to motor deficit some limitations are appear in people with *Pakshaghata*, such as decreased strength, muscle tone, rigidity, limited range of motion, poor coordination, hemiparetic gait and its lead to increased energy expenditure and feel fatigue.

Vitiated Sronita (blood) and fatigue

Pathogenesis of *Margavarana* leads vitiation of *Vata Dosha* and manifestation of *Shrama* (fatigue). *Acharya Charaka* mentions that *Shrama* (fatigue) lead to vitiated *Sronita* (blood) and vitiated *Sronita* (blood) leads to manifestation *Klama* (mental fatigue).

Ojo Dusti (disorder of Ojas) and fatigue

Normal stage of *Ojas* play a major role to proper development of mussel, unobstructed movement, clarity of voice, complexion and maintain normal function of *Bahira* (external) and *Abyanthara* (internal) *Karana* (motor, sensory, and cognitive functions). But the *Ojo Visransra* (displacement of *Ojas*) leads to *Shrama* (fatigue) and *Kriya Sanniroda* (loss of functions). *Acharya Susrutha* mentioned that *Abigatha* (trauma) *Dathu kshaya* (diminution of tissue) *Shrama* (fatigue), and emotional changes are contribute to diminution of *Ojas* (*Ojo bransa /Ojas kshaya*) and *Acharya Charaka* mentioned that *Udana Vata Avarana* (occluded) by *Pitta* leads to loss of *Ojas* (*Ojo bransa*). It implies that both physical and mental factors are contributing to the disorders of *Ojas* and *Margavarana* (occlusion of *Srotas*) and *Dhatukshaya* (depletion of *Dhatu*) has a role on *Ojas* to manifestation of *Shrama* (fatigue) and *Kriya Sanniroda* (loss of functions) after stroke.

Emotional changes and fatigue

When *Vata Dosha* is not vitiated, it initiates all type of actions, leads to control mind, and employs all sense organs and their activity. When *Vata Dosha* is visited it leads emotional changes like *Kopa* (agitation), *Shoka* (worry) and *Addyanam* (anxiety). These lead to diminution of *Ojas* (*Ojo bransa /Ojas shaya*) and manifestation *Shrama* (fatigue)²⁶. It implies the Psychological influences (e.g. anxiety, depression etc) to the pathogenesis of fatigue after stroke (*Pakshaghata*).

Anidratha (insomnia) and fatigue

Anidratha (insomnia) is usually found in the patient with fatigue. The terms *Anidratha*, *Asvapna* and *Nidranasha* can be resemble with insomnia. *Acharya Charaka* mentioned that vitiation of *Vata Dosha* leads to manifestation *Ayasa* (fatigue) as well as *Anidratha* (insomnia). It implies that insomnia and *Ayasa* (fatigue) are the inseparable clinical conditions which can impact on fatigue after stroke (*Pakshaghata*). The term *Asvapna* is found as a *Roga* among 80 types of *Nanatmaja Vata Vyadhi* and *Acharya Susrutha* mentions that vitiated *Vata Dosha* and *Pitta Dosha* are responsible for *Nidranasha*.

Complication of fatigue

Acharya Bavamishra mentioned *Shrama* (fatigue) lead to manifestation of *Vata Vyadhi*²⁷ and *Acharya Charaka* quoted that *Shrama* (fatigue) leads to vitiation of *Sronita* (blood)²⁸. According to *Acharya Bhavamisra* *Shrama* (fatigue) leads to *Hradroga*²⁹ and according to *Acharya Charaka* both *Pakshaghata* and fatigue can be manifested due to *Margavarana* and neglecting of *Avarana* also leads to manifestation *Hrdroga*³⁰.

DISCUSSION

There are many references in Ayurvedic texts about the terms *Ayasa Shrama* and *Klama* which can be commonly affected to the fatigue after stroke (*Pakshaghata*). According to Ayurveda different *Samprapthi* (pathogenesis) in different *Srotas* (channels) leads to manifestation various diseases. Pathogenesis of *Margavarana* (occlusion of *Srotas*) and *Dhatukshaya* (depletion of *Dhatu*) leads to visitation of *Vata Dosha* and manifestation both *Pakshaghata* and fatigue (*Ayasa/Shrama/klama*). According to the Ayurveda, *Pakshaghata* itself (due to vitiated *Vata Dosha*) ,vitiated *Sronita* (blood) , *Ojo Dusti* (disorder of the *Ojas*), as well as behavioral changes like *Anidratha* (insomnia) and emotional changers like *Kopa* (agitation) *Shoka* (worry) and *Addyanam* (anxiety) are the factors that contribution to the fatigue after stroke (*Pakshaghata*). *Acharya Charaka* mentions that, fatigue (*Ayasa*) is the unhealthiest regime. *Shrama* (fatigue) leads to further vitiation of *Vata Dosha*, vitiation of *Sronita* (blood) and leads to manifestation complication like *Hradroga*. *Margavarana* is one of the pathogenesis of fatigue after stroke and neglecting of *Avarana* also leads to manifestation the *Hrdroga*. It may imply that fatigue leads to increase vascular risk factors and may be contribute to second attack of stroke. When treating Stroke (*Pakshaghata*) it is important to manage existing fatigue, because it has negative impact on functional recovery.

Ongoing research on fatigue after stroke

The authors are currently conducting a research in Sri Lanka titled "Clinical Evaluation of *Shirodhara* and *Matra Vasti* with *Baladi Yoga* on Motor Deficit and Fatigue after Stroke (*Pakshaghata*)". This is the research component of the MD (*Ayu*) from 2012 to 2015 of the first author.

CONCLUSION

In addition to motor impairment, fatigue after stroke is a common complaint but neglected issue. In Ayurvedic perspective pathogenesis of *Margavarana* (occlusion of

Srotas) and *Dhatukshaya* (depletion of *Dhatu*s) leads to both *Pakshaghata* as well as fatigue. Multiple psychosomatic factors contribute to fatigue after stroke (*Pakshaghata*). Fatigue has a negative impact on the recovery process of the stroke (*Pakshaghata*). Therefore a proper intervention is necessary.

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