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Management of *Avabhahuka* (Frozen Shoulder) Through Sri Lankan *Ayurveda* Treatment Protocol: A Case Study

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Abstract:

Avabhahuka is a disease that affects the shoulder joint *(Amsa sandhi*) and it is manifested by the vitiated *Vata dosha according to Ayurveda.* Clinical features of *Avabhahuka* are mostly resembled to the frozen shoulder or adhesive capsulitis in modern medicine. The pain (*Shoola*) and stiffness (*Sthabdhata*) of the shoulder joint, with functional deficit (*Bahupraspanditahara*) leads huge impact on the quality of life of the patients suffering with *Avabhahuka* disease. It affects on middle age group community and occurs 2% of the general population and the diabetes patients are more prone to develop frozen shoulder. The study has been focused to manage the *Avabhahuka* disease based on the treatment principles mentioned in *Ayurveda*. A fifty six year old male patient diagnosed as *Avabhahuka* disease; presented with pain (Shoola), Stiffness *(Stabdhata)*and restricted movement *(Bahupraspanditahara)* in the right shoulder joint since five months was reported to the I.P.D, Department of Kayachikitsa, National Ayurveda Teaching Hospital , Borella, Sri Lanka was selected to the study. The treatment period was twenty eight days. The Patient was advised to take 120 ml of *Rasanadi Kwata* and 500mg of *Triyodasanga Guggulu*two times per day after meal as internal treatments along with *Griva Vasti*, *Dashamoola Nadi* Sewda, and paste *of Gaslabudiyalabu(Sri Lankan traditional paste)* were administered as external treatments for initial consecutive fourteen days. *Shad bindu Tailaya Nasya* followed by *Abyanga* and *sweda* with *Nikadi pottani* carried out for next fourteen days. After completion of the treatment; it has been observed that, pain (Shoola) was completely cured. 66.6% relief was obtained in stiffness (*Sthabdhata*) and movement (*Bahupraspanditahara)*of the right shoulder joint. In view of the above; it can be concluded that the therapeutic protocol is effective for the disease *Avabhahuka* successfully.

Key words: *Avabhahuka, Nasya, Ayurveda, Traditional Regimen*

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Vata Vyadhi has been vividly describedunder the *Ashtamahagada*due to its poor prognosis according to *Ayurveda* view point [1]. *Avabhauka* manifested due to the vitiation of *Vata*and *kapha Dosha*and itisconsidered as a Nanatmaja *Vatavyadhi* according to the *Acharya Susruta* and Acharya Madava[2-3]. *Amsha Shosha* and *Avabhahuka* are two different clinical entities mentioned in *Madava Nidana* under the *Vata Vyadhi. Amsha shosha* could be considered to be primary manifestation of aforesaid disease due to dryness of *Sheleshaka Kapha* in the *Amsa Sandi* (Shoulder joint). Even though the *Avabhahuka* is *Vata Kapha janyaRoga*; *Madhukosha Teeka*, considered the *Amsa shosha*as *shuddha Vata roga* developed due to *dhatukshaya*[3]. But in *Avabahuka,* the patients suffers *Shoola* (pain) and *Sthabdata (*stiffness*)*restriction of movements (*Bahupraspanditahara/ karma hani)* due to the depletion of *Shleshaka Kapha.*Analyzing the etiopathogenesis, it may be interpreted that the disease *Apabahuka* manifests due to aggravation of *Vata Dosha* and the depletion of tissue elements (*Dhatu kshaya*) in the region of Amsa Sandhi which leads to *Shoola,* and *Bahupraspanditahara* in *Amsa Sandhi* or *karmahani* of *bahu*. The clinical features of *Avabhakuka* is resembled with Frozen shoulder which is a painful and disabling condition in the shoulder joint that often causes great frustration for patients and care givers due to its slow recovery.

Frozen shoulder starts with a painful phase due its initial inflammatory response which evolves into a fibrotic reaction which leads to contractures of individual structures in the capsule. Capsular restriction reduces internal rotation of the shoulder and may be present with severe forms of frozen shoulder [4-5]. Different therapeutic intervention are adopt to succeed this painful condition but still relatively low cost and effective treatment modalities are not in the present practice. So new therapeutic intervention should be designed to improve the patient's quality of life. Hence the study is planned to explore the effect of the Ayurveda treatment regimen for the management of *Avabhahuka.*

Case Report:

A 56 years old male patient presented with shoola (severe pain) in mid clavicular region radiate to the right elbow joint, Stambha (stiffness), over and the behind the neck and restricted movement of right hand since five months was selected to the study. Further; he complaints pain aggravated during activities, cold climate, especially in the evenings and night. On examination, it was elicited that the movements was restricted (RM) in the right shoulder joint and tenderness was noticed at the head of humerus without swelling. The study was conducted at I.P.D., Department of Kayachikitsa, for a period of one month. Hematological Investigations such as FBS, Lipid Profile, ESR, and radiological report of Digital X-Ray in cervical region and Right Shoulder joint were taken and findings were within normal limits. Signs and symptoms of the Avabhahuka were recorded before and the after the treatments. Empty

Can Test (Jobe Test) and Drop Arm Test (Codman`s Sign) [6] were used to assess the efficacy of treatment regimen on Avabhahuka.

Intervention

Patient has been advised to follow the treatment for a period of 28 days and signs and symptoms were recorded before and after the treatment and weekly during the period of 28 days.

Table-1: Internal Medicine

Recommended Medicine	Mode of administration	Dosage		Duration
Rasna 22 Decoction + Triyodhashanga Guggulu [7]	Oral	120 ml 500mg	Morning & Evening	1st -14th Day
Rasna 27 Decoction +[8] Yogaraja Guggulu[9-10-11]	Oral	120 ml 500mg	Morning & Evening	15th – 28th Day

Table -2: External Therapeutic procedure

Recommended External Treatments	Used Medicine	Dosage		Duration
Abhyanga – Greeva Predesha (Oil application)	Kubja Prasarini	30 ml	Morning- 9.00am	1st-14th Day
Sankara Sweda	Nikadi Potali		Morning- 9.30am	
Gaslabu Dilabu Pattu (Herbal Paste)- Shoulder		250gm	Evening-At 2.00pm	
Greeva Vasthi (Oil application)	Kubja Prasarini	300 ml	Morning-9.00am	15th-28th Day
Nasya (Nasal instillation)	Shad Bindu oil	3 Drops to each nostril	Morning- At 10.00am	21st- 28th Day

Table -3: Ingredients of Gaslabu Diyalabu Paste: (Sri Lankan Traditional Polyherbal Formula)

Ingredients in Sinhala Name	Used Part	Botanical Name	Quantity
Gaslabu (Papaya)	Fruit	*Carica papaya* Linn.	500gm
Diyalabu	Fruit	*Lagenaria siceraria*	500gm
Perumkayam	Extract	Asafoetida	25gm
Kekulu Hal (Red Rice)	Seeds	*Oryza sativa* Linn.	200gm
Pol kiri (Coconut milk)	Fruit	*Cocos nucifera* L.	240 ml
Amu kaha (Raw Turmeric)	Rhizome	*Curcuma longa* L.	200gm
Napiritta	Leaves	*Hibiscus surattensis*	200gm
Ghrita (Cow Ghee)			30ml

Method of preparation - Gaslabu Diyalabu Paste (A Sri Lankan Traditional Poly herbal formulae)

Both Gaslabu (*Carica papaya)* and *Dilabu (Lagenaria siceraria*) had been scraped properly and collected 500gm pulp from each fruit. Then added *25gm* of Perumkayam, 200 gm of powder form of Kekulu Hal (*Oryza sativa*), 200gm of Amu kaha (Raw *Curcuma longa*), and 200g of Napiritta *(*Raw*Hibiscus surattensis)*and grinded them collectively. After that;240ml of Pol kiri (Juice of *Cocos nucifera*)were added and stirred well. The mixture has been kept on moderate fire until it became a form of paste. Finally mixture was grinded with 30 ml of Ghee and collected the final product as form of paste
.

Table -4: Method of preparation of Nikadi Potali (A Sri Lankan Poly herbal formulae)

Ingredients in Sanskrit Name	Botanical Name	Used Part	Quantity
Nirgundi	*Vitex nigundo* L.	Leaves	100g
Eranda	*Ricinus Comunis* Linn.	Leaves	100g
Adatoda	*Vasica auriculata*	Leaves	100g
Shunti	*Zingiber officinalis* Roscoe	Rhizome	25g
Lasuna	*Allium sativum* L.	Rhizome	25g

Collected the 100gm of fresh leaves of*Vitex nigundo, Ricinus Comunis, Vasica auriculata* and 25gm of Rhizomesof *Zingiber officinalis, Allium sativum.* Washed properly and crushed. Then prepared two herbal bundles using 12'X12' white cloth. Heat it on stemmer in 15 minutes.

Table-5: Ingredients of Rasanadi -22 Decoction

Sanskrit Name	Botanical Name	Used Parts
Rasna	*Pluchea lanceolata* (DC.) OLiv. & Hiern	Rhizome
Shunti	*Zingiber officinale* Roscoe	Rhizome
Guduci	*Tinospora cordifolia* (Willd.) Miers ex Hook. f. & Thoms.	Stem
sachara	*Barleria prionitis* Linn.	Whole plant
Jalada	*Cyperus rotundus* L.	Rhizome
Shatawari	*Asparagus racemosus* Willd.	Rhizome
Pathya	*Terminalia Chebula* Retz.(Linn. F.)	Seeds
Devadru	*Argyria speciosa*.(Linn.f.)	Stem
Tikta	*Picrorhiza kurroa* Royle ex Benth.	Whole plant
Kharjura	*Pongamia pinnata* (L.)Pierre	Stem
Vasa	*Adhatoda vasica* L.	Whole plant
Eranda	*Ricinus communis* L.	Whole plant
Shalaparni	*Desmodium gangeticum* (L) DC.	Whole plant
Prushnaparni	*Uraria picta* (Jacq.) DC.	Whole plant
Vartaki	*Solanum indicum* Linn.	Whole plant
Kantakarika	*Solanum carpum*	Whole plant
Gokshura	*Tribulus Terrestris* L.	Whole plant
Bilva	*Agele Marmelos* L.	Roots
Agnimanta	*Clerodendrum phlomidis* Linn. f.	Roots
Gambhari	*Gmelina arborea* Roxb. ex Sm.	Roots
Patala	*Stereospermum suavolans (Roxb.) DC.*	Roots
shyonaka	*Oroxylum indicum* (L)	Roots

All the ingredients have been washed thoroughly and dried it under the shade drying.1 Kalan and 04 Madata (5gm+0.25x4=6gm)has been taken from each ingredient and add 3L 840 ml water. Boiled and reduce water to 480 ml (16-2) under moderate temperature.

Table-6: Ingredients of Rasanadi -27 Decoction [8]

	Sanskrit Name	Scientific Name	Used Parts
1.	Rasna	*Alpinia* (L.)	Rhizome
2.	Shigru	*Moringa oleifera* (L.)	Rhizome
3.	Punarnawa	*Boerhavia diffusa* (L.)	Roots
4.	Agaru	*Aquilaria agallocha* Roxb.	Wood
5.	Shathi	*Kaempferia galangal* (L.)	Rhizome
6.	Nirgundi	*Vitex negundo* L.	Roots
7.	Chavya	*Piper chuvya* (Miq.) C.DC.	Roots
8.	Bala	*Sida cordifolia* Linn.	Roots
9.	Chithra	*Ricinus communis* Linn.	Roots
10.	Bharngi	*Clerodendrum indicum* (L.)	Roots
11.	Rasona	*Allium sativum* (L.)	Bulb
12.	Pushkara	*Inula racemose* Hook. F	Roots
13.	Nisha	*Curcuma longa* L.	Rhizome
14.	Shairika	*Barleria prionitis* Linn.	Roots
15.	Vishva	*Zingiber officinale* Roscoe	Rhizome
16.	Agni	*Plumbago zeylanica* L.	Roots
17.	Bilva	*Aegle marmelos* (L.)	Roots
18.	Agnimantha	*Clerodendrum phlomidis* Linn.	Roots
19.	Shyonaka	*Oroxylum indicum* (L.)	Roots
20.	Kashmarya	*Gmelina arborea* Roxb. ex Sm.	Roots
21.	Patala	*Stereospermum suaveolens*(Roxb.) DC	Roots
22.	Shalaparni	*Desmodium gangeticum* (L.)	Roots
23.	Prushnaparni	*Uraria picta* (Jacq.) DC	Roots
24.	Vruhathi	*Solanum melongena* L.	Roots
25.	Kanthakari	*Solanum virginianum* L.	Whole plant
26.	Gokshura	*Tribulus terrestris* L.	Whole plant
27.	Daru	*Berberis aristata* DC	Wood

All the ingredients have been washed thoroughly and dried it under the shade drying. 18 Madata (0.25gmx18=4.5gm)has been taken from each ingredient and add 3L 840 ml water. Boiled and reduce water to 480 ml (16-2) under moderate temperature

Assessment criteria

Bahu shoola (pain), Bahu Sthambha (stiffness) and Bahu Praspanditahara (restricted movements) has been assessed before the treatment and every week after

the treatment. Changes of the intensity of signs and symptoms were recorded a Performa. Effect of treatment regimens were evaluated by symptomatic relief based on the grading system during the period of 28 days. Patient was advice to attend clinic after two week for follow up effect of the treatment protocol.

Grading parameters

Bahu shoola (Pain)

0 – No Pain

1 – Mild Pain (nagging, annoying, interfering little with activities of daily livings)

2 – Moderate Pain (interferes significantly with activities of daily livings)

3 – Severe Pain (disabling; unable to perform activities of daily livings)

Bahu sthambha (Stiffness)

0 – No stiffness

1 – Mild, has difficulty in moving the joints without supports

2 – Moderate, has difficulty in moving, can lift only with support

3 – Severe, unable to lift

Bahu praspanditahara (Restricted movements)

0 – Can do work unaffectedly

1 – Can do strenuous work with difficulty

2 – Can do daily routine work with great difficulty

3 – Cannot do any work

Statically Analysis

Data were collected and analyzed the percentage wise reduction of the signs and symptoms before and after the treatment regimen.

Observation and Results

Table-7: Effect of clinical sign and symptoms of treatment regime

Clinical feature	Before Treatment (BT)	End of the 1st week	End of the 2nd week	End of the 3rd Week	End of the Treatments
Bahu shoola (Pain)	3	1	1	0	0
Bahu stambha (Stiffness)	3	3	2	1	1
Bahu praspanditahara (Restricted movements)	3	3	2	1	1

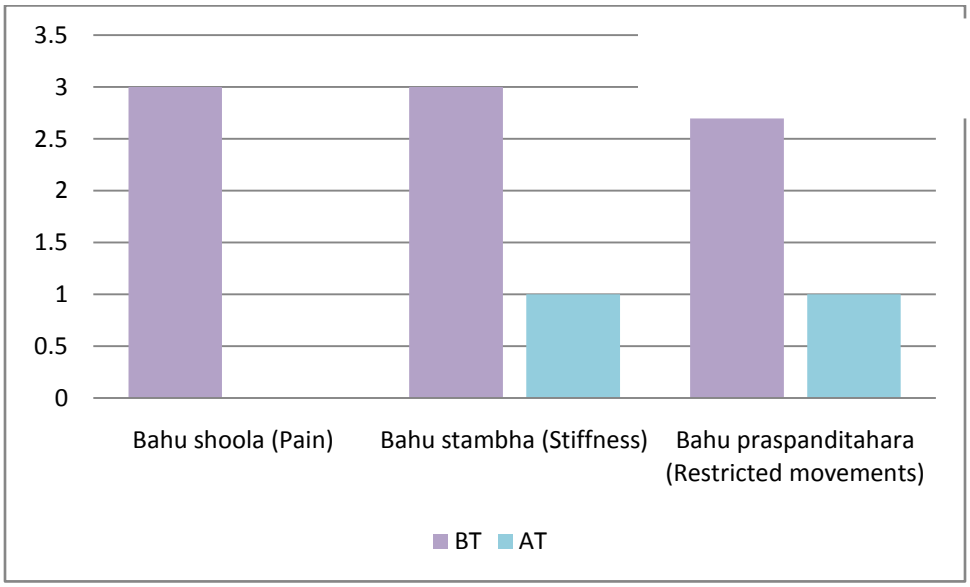
Observations:

Figure 1: After the 1st week

Figure 2: After the 2nd week

Figure 3: After 3rd week

Figure 4: End of the treatment



It was observed that Bahu shoola (Pain) was completely cured and 75% relief was obtained to Bahu praspanditahara (Restricted movements) and Bahu sthambha (Stiffness) in the affected shoulder joint.

Discussion:

Avabhahuka (Frozen shoulder) is a disease described under the *Vata Vyadhi*(neurological disorders) which is manifested due to vitiation of Vyana*vata.* Pathogenesis of the diseaseis taken placeeither *Dhatuksaya* or *Kapha avarana*.

The treatment regimen was planned to discontinue the etiopathogenesis bypacifying*Vata* and *Kapha dosha*by adopting *Snehana*(oleation), *Swedana*(Foementation), *Samsamana*(Pacification therapy), *Samshodana*(Elimination therapy)including *Nasya karma*(Instillation) and *Nidana parivarjana (*prevention from causative factors). In addition; Abhyanga *Karma*(Oil application)with*Vata samana Taila* brings *Snigdhata* (oleation) in the body whichleads to minimize the *Bahu shoola* (Pain), *Stabdata* (Stiffness) and Praspanditahara (Restricted movement) in the shoulder joint.Further, *Bahir Snehana*(External oleation) and *Swedana*(Sudation) therapies are extensively practiced in *Avabhahuka*disease. In this case study; it has been observed that after the *Snehna* and *Sewedana* procedure by using *Kubja Prasarini Taila* and *Nikadi pottali* relieves *Stambha* (Stiffness), *Gaurava*(Heaviness) and *Shitata*(Coldness) in the particular region of the *AmshaDesha* (Shoulder region)due its *Vata Kaphara* properties of the ingredients. Moreover*; Gaslabu Diyalabu* paste is a traditional poly herbal formulaeapplied by native physicians in Sri Lankan since ancient times. Documentary evidences revealed that ingredients of poly herbal paste contains different phytochemicals which shows anti-bacterial activity, anti-inflammatory, antispasmodic and Analgesic activit.]Futher; research study clearly revealed that the pytochemicals constituents in the ingredients of *Yogaraja Guggulu* were more of tannins, alkaloids, terpenes, flavonoids, Glycosides and steroids. Due to the presence of those pytochemicals known to be responsible for antimicrobial and antioxidant capacity[15]with potent anti-inflammatoryactivitywhich facilitate the reduction of *Shoola* (pain), and *Stabdata* (Stiffness) in the shoulder region and improve stability of the joint.

*Nasya karma*is one of the therapeutic procedures of *Panchakarma* (Elimination procedure) which exerts its therapeutic effects on the *Urdhavajatrugatapradesha*. Therefore,impact goes to*Amsha Desha*; especiallyon Sira, Snayu, Mamsa, Asthi and kandara. Hence, flexibility of the tendons occurs which leads to subside the stiffness in the rotator cuff in the shoulder joint.

Pharmacodynamic potential of *Rasnadi* decoction- 22 has *Vata* and *Kapha shamaka,Shotahara,Agni Deepana, Ama Pachana*properties due to its*Tikta, Katu* and *Madura* in *Rasa*, *Usna* in *Veerya* and *Katu* in *Vipaka*.In addition pytochemicals constituents of Rasana- 22 decoctionpossess Tannins, Flavonoids, Glycocides, Alkaloids, Saponins which has anti-inflammatory,

analgesic and anti-bacterial, antioxidant effect. Maximum number of ingredients presents in Rasana -22 decoction has *Deepana* and *Pacana* properties which contribute to significant role in clearing *Ama* and *Srotoavarodha* and exerting the normal functions of the shoulder joint.

Consist of Dashamoola in Rasana- 22 decoction; it was found that it hasanti-inflammatory agent which helps to minimize the pain during movements at shoulder joint [12].

Furthermore, maximum number of ingredients of Rasana -27 decoction showed*Katu, Tikta Rasa*,*Shoolahara* and *Shotahara , Rasayana, Amapachaka and Vatashamaka* properties and Tannins, Terpenoids, Flavonoids, Glycocides, Alkaloids, Saponins, Hexanoic, ethyl ester, Sisterols Vitamin E, Ascorbic acid,Vitamin A, Riboflavin, Niacin,Folic acid constituents of that particular decoctions showed antimicrobial, antioxidant, Analgesic, Anti-inflammatory, anti ulcerogenic, Hypercholesterolemic activities which helps to disrupt the pathogenesis of *Avabahuka*..

Conclusion:

Considering the above findings it can be concluded that the treatment protocol is effective in the management of Avabhahuka. Treatment modality can be prescribed as a standard procedure considering its effectiveness for Avabahuka. Further clinical trials, cytotoxic studies and drug standardization should be conducted to evaluate the efficacy of the treatment regimen with larger sample to draw a generalized conclusion

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