

Probable Cardiac Complications of *Vaman Karma* in *Hrid rogas* (Cardiac diseases)

Review article

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Abstract

In India, perhaps due to rapid pace of economic development, epidemiological changes have spanned a much shorter time. As a consequence, cardiovascular disease has emerged as the leading cause of death all over India. Heart is the centre of circulatory system that plays a major role in the physiological processes of the body. In *Ayurveda*, *Hridaya* has been described as the site of *Mana* (mind), *Buddhi* (intellect) and *Chetana* (soul). *Vaman karma*, a prime treatment modality of *Panchakarma*, though has been mentioned as a curative procedure for *Hrid roga*, is now becoming less popular day by day in anticipation of its probable cardiac complications. If *Vaman* is not administered properly, it even plays a role as etiological factor of *Hrid roga* as well as its predisposing factor. *Sushruta* has indicated *Vaman Karma* in all type of *Hrid rogas*, but *Charak* has mentioned it only in *Kaphaja Hrid roga*.

In *Ayurvedic* classics, many signs and symptoms suggestive of cardiovascular complications like *Hrid graham* (cardiac spasm), *Hridyopsarana* (Cardiac arrest), *Mrityu* (death) etc are described in the context to *Vaman karma*. *Vaman karma* in a cardiac patient must be planned judiciously; otherwise it may produce severe complications at any stage of therapy. This article lays emphasis on the probable cardiac complications of *Vaman karma* that may occur in a cardiac patient by various mechanisms such as by reducing blood supply to heart tissue or by causing low cardiac output state etc.

Key Words: *Hrid roga*, *Vaman karma*, Cardiac complication of *Vaman karma*.

Introduction

Heart is the centre of circulatory system that plays a major role in the physiological processes of the body. In *Ayurveda*, *Hridaya* (heart) has been described as the

site of *Mana* (mind), *Buddhi* (intellect) and *Chetana* (soul) (1). It is one of the *Trimarma* (three major vital spots) which are the bases of *Prana* (life) (2). The importance of the *Hridaya* was well accepted in the *Samhita* period, so a detailed description of *Hrid roga* (cardiac disease) along with its treatment has been explained in *Sutra sthana* as well as in *Chikitsa sthana* of *Charak Samhita* and almost in all other classics (3) (4). With the advancement of the civilization, the importance of this disease is growing rapidly because of the changed lifestyle of

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the common mass to match the pace with fast life. Moreover the sedentary life and bad eating habits has made the people more prone to such diseases. In India, perhaps due to rapid pace of economic development, epidemiological changes have spanned a much shorter time. As a consequence cardiovascular diseases have emerged as the leading cause of death all over India (5). In this scenario, *Panchkarma* therapy may be a good alternative therapy to combat various life style related diseases, but the *Panchakarma* physicians are not accepting this opportunity as a challenge particularly in cardiovascular diseases because of some untoward complications of procedures especially of *Vaman karma*.

Aims and Objectives

1. To review the *Ayurvedic Samhitas* in context to *Vaman karma* and its significance in *Hrid roga*.
2. To study the probable mechanism of cardiac complications that may occur during *Vaman karma*.

Material and Methods

In this study, only textual materials have been used to collect relevant references. *Ayurvedic* texts, literature of modern medicine and related websites have been explored to study the subject thoroughly. All the collected materials were compared to establish a probable mechanism that can justify various aspects of *Vaman karma* in context to cardiac complications in *Hrid roga* (Cardiac diseases).

Conceptual study

Hrid roga* and *Vaman karma

Role of *Vaman karma* in the management of *Hrid roga* is a matter of concern in *Ayurvedic Samhitas*. *Charak* has contraindicated *Vaman karma* in *Hrid roga* in general but indicate it only in *Kaphaja Hrid roga* (6) (7). *Vagbhatta* also mentioned *Vaman karma* in the treatment

of *Kaphaja Hrid roga* only (8). *Sushruta* has indicated *Vaman* as a general treatment in *Hrid roga* and commentator *Dalhana* has approved its significance even in *Vataja* and *Pittaja Hrid rogas* by saying that, in both of these cases *Vayu* and *Pitta* comes to the seat of *Kapha* (9) (10). It is interesting to note that over action of *Vaman karma* has been mentioned as one of the causative factor of *Hrid roga* (11). More-over, *Charaka* has mentioned that *Hrdyoparodha* (cardiac arrest) may occur if *Vaman* is administered to a person having *Hrid roga* (12). In this view it can be said that, besides being the treatment modality for *Hrid roga*, *Vaman karma* may play a role of etiological factor as well as predisposing factor for *Hrid rogas* (cardiac diseases).

Commonly occurring cardiac complications in a cardiac patient

Cardiovascular collapse and cardiac arrest are the main cardiac emergencies in which effective cardiac output is reduced and as a result blood flow to the brain gets diminished which ultimately may lead to death.

Cardiovascular collapse is sudden loss of effective blood flow due to cardiac and/or peripheral vascular factor which may reverse spontaneously or with intervention (13). The cardiovascular collapse can take place mainly because of Neurocardiogenic (Vasovagal) syncope, postural hypotension and Cardiac syncope. Cardiac syncope may occur due to arrhythmia, reflexive heart block due to irritation of vagus nerve, massive myocardial infarction and aortic stenosis (14).

Cardiac arrest is the abrupt cessation of cardiac pump function which may be reversible by a prompt intervention; but will lead to death in its absence (15). It is somewhat a grave condition. The cardiac arrest can take place through ventricular fibrillation,

ventricular asystole, and electro-mechanical dissociation (16).

There are many functional and structural factors which may contribute to the predisposition of cardiovascular complications (17). The structural factors are coronary heart disease (like chronic atherosclerotic lesion, myocardial infarction, acute thrombosis etc), myocardial hypertrophy, dilated cardiomyopathy, myocarditis, valvular heart disease and electro-physiological abnormalities like WPW syndrome. Amongst the functional contributing factors, alterations of coronary blood flow (as in transient ischemia), low cardiac output state (as in vasovagal shock and heart failure), systemic metabolic abnormalities (like hypokalemia, acidosis, hypoxemia), neuro-physiological disturbances and toxic responses (due to pro-arrhythmic drug effect, cardiac toxins, drug interaction) are the leading causes for cardiovascular complication.

Features suggestive of cardiac complications during *Vaman karma*

With respect to *Vaman karma*, various conditions has been described in *Ayurvedic Samhitas* which closely resemble the cardiovascular complications (18)(19)(20)(21)(22)(23). Of these some can be compared to the Cardiovascular collapse while others can be compared to the Cardiac arrest. [Table-1]

Table-1: Features suggestive of cardiovascular collapse and cardiac arrest

Features suggestive of Cardiovascular collapse	Features suggestive of Cardiac arrest
<i>Bhrama</i> (giddiness)	<i>Hridaya-graha</i> (cardiac spasm)
<i>Moha</i> (unconsciousness)	<i>Hridyaopsarana</i> (cardiac arrest)
<i>Tamah</i> (blurring of vision)	<i>Hridayoparodha</i> (cardiac arrest)
<i>Visamjnata</i>	<i>Mrityu</i> (death)

(unconsciousness)	
<i>Murchchha</i> (fainting)	<i>Hridyaapkarshan</i> (straining of heart that induces haemorrhage through different orifices)
<i>Hridaya peeda</i> (angina)	

Vaman karma can produce cardiovascular complication in cardiac patient

Vaman is the specific process of induced and controlled vomiting in which the content of upper gastro-intestinal tract (stomach & duodenum) comes out forcibly with the morbid matters of body. In this process, there is marked increase in the cardiac output. If *Vaman* is administered to a *Hrid rogi* (cardiac patient), there is a chance of appearance of cardiac complications which may be predisposed by the following mechanism.

- **By reducing blood supply to heart tissue-** During *Vaman karma*, cardiac contraction are more forceful to maintain a high cardiac output state which increases oxygen demand in heart muscles. So, in the patients of ischaemic heart disease, old myocardial infarction, cardiomegaly or cardiomyopathy, where blood supply to heart itself is already compromised, *Vaman* may worsen the condition to even dreadful (24) (25).
- **By causing low cardiac output state-** This may occur primarily due to over action of *Vaman* which may cause hypovolemia. Patients with mitral stenosis, aortic regurgitation or mitral regurgitation may face the low cardiac output state. Fear factor or fatigue due to *Atiyoga* (over action) of *Vaman* may cause vasovagal shock in which peripheral vascular dilation occurs (26).

- **By producing metabolic abnormalities** – In over action of *Vaman*, gastric contents are expelled in large quantity and so hypokalemia may occur which is the cause of arrhythmias (27). Hyperventilation occurs during this therapy as *Vaman* is a strenuous process and may lead to alkalosis. Besides this, unsafe drugs or even safe drugs in high doses may lead to excessive vomiting that may finally cause metabolic alkalosis and acidosis too (28) (29).
- **Due to nervous causes-** Irritation of vagus nerve during *Vaman* can produce bradycardia and so syncope may occur (30). Various neuropathies like autonomic neuropathy can cause postural hypotension.
- **By causing arrhythmia** – Due to adverse effect of drugs, bradycardia, tachyarrhythmia or fibrillation may occur; all of which cause a low cardiac output state.

Minimization of cardiac complication by proper screening and planning

Complications of *Vaman karma* are due to defect in *Preshya* (attendant), *Bheshaja* (drug), *Vaidya* (physician) and *Aatura* (patient) (31). If the patient is having *Hrid roga*, then importance of all these is much increased and their harmonization is of utmost importance. By rectifying the probable shortcomings at every level, *Vaman karma* can be administered to the cardiac patients.

Physician is the most important among *Chikitsa-chatushpada* (quadruple of therapeutics) and all other factors are secondary to him (32). He must go through proper medical history especially in the purview of cardiac diseases before planning of *Vaman karma*. Basic biochemical and non invasive techniques like ECG, Ecocardiography should be investigated for proper screening of patients. Consideration of screening as per *Ayurvedic* methods as of *Dosha*, *Bheshja*

(Drug), *Desha* (Habitat), *Kala* (Time), *Bala* (Strength), *Sharira* (Body), *Aahara* (Diet), *Satmya* (Wholesomeness), *Sattva* (Mind), *Prakriti* (Constitution), *Vaya* (Age) etc. is also important because examination of all these factors only determines the success of the therapy (33). *Vaman* must be employed in *Kapha* dominant stage of disease and should be done in early morning which is the *Kala* of *Kapha dosha*. In case of *Vata* or *Pitta* dominance, chance of arrhythmia is there which may produce *Hridshool* (cardiac pain) and spasm of coronary artery. *Vaman karma* is contraindicated both in elderly and children as both of them cannot tolerate the potency of drugs used in *Vaman karma*; so consideration of age is important (34). Chances of coronary artery disease, old myocardial infarct and hypertension are more in elderly patient, while children may have congenital heart disease or Rheumatic Heart Disease. So administration of *Vaman* in these age groups should be done judiciously and cautiously. *Satva* (mental strength) and *Bala* (physical strength) are also major factors. In *Alpa satva* patients, chances of vasovagal shock and palpitation are more. In weak patients, excess of *Vaman karma* may lead to hypovolumic shock. In *Sukumar* (tender) patients, *Vaman* can predispose *Hrdyopkarshana* (straining of heart which induces haemorrhage from different orifices) (35). Physician must be very well equipped and attentive enough to diagnose and treat cardiac complication at the earliest. All the medicines and equipments etc must be collected before starting the procedure to combat any untoward situation (36).

In cardiac patients, only *Mridu Vaman* with a suitable *Vamanopag* drug should be applied. If the drug used in *Vaman* is *Teekshna* (highly potent), or used in large quantity, then over action of *Vaman* may take place prevailing mainly *Vataja* or *Pittaja* complications(37) (38). The established safe drugs should be used

in cardiac diseases. Repetition of drug must be avoided during the therapy (39). Drugs like *Madanphala* (*Randia dumetorum*) and *Kutaja phala* (*Holarrhena antidysentrica*) can be used for *Vaman karma* in cardiac patients (40) (41). Cardiac tonic drugs like *Ela* (*Elettaria cardamomum*) etc may be mixed with *Madanphala* to reduce the probable cardiac complications of the *Vamana* therapy (42). Patients must be cooperative and must provide his detailed history of any previous cardiac disease to the physician. During *Vaman*, he must follow the instructions of physician to avoid retention of *Vaman* drug than can induce *Atiyoga* (over action). Attendant should be experienced enough to handle any untoward situation. Surroundings in *Vaman* room must be soothing so that patient does not hesitate; otherwise patient may try to withhold the urges of vomiting which can cause *Hrid graha* (cardiac spasm) (43).

During any such complication, physician should confidently treat the patient. For this *vaman* should be given in the initial condition of *Hrid graha* when faintness has not settled completely. In a faint patient, this emetic medicine should be pasted in the root of tongue. In this way *vaman* medicine present in the stomach can be removed (44). To get back the consciousness of such faint patient, *nasya* can also be done with *teekshna* medicines. Chest of the patient must be massaged with *vata* alleviating oil and then fomented with paddy (*dhanya*). After this, *Anuvasana basti* with should be given with the oil processed with *madhuyasti* (*Glycyrrhiza glabra*) (45).

Discussion

Vaman karma is a strenuous process and it may predispose cardiac complications in the form of cardiovascular collapse or cardiac arrest through various mechanisms, if applied to a patient of *Hrida roga*. Critical analysis

of *Ayurvedic samhitas* reveals that, most of the chances of cardiac complications occur due to the over action of *Vaman* or if it is done in a contraindicated condition. In *Charak Samhita*, *Vaman karma* is mentioned only in certain condition of *Hrid roga* (46). It is always better to assess the condition of patient by several parameters mentioned in *Ayurvedic* classics as well as by using various imaging techniques of modern sciences. The physician's own discretion and reasoning should be final in incorporating *Vamana karma* in cardiac diseases (47). In some of the diseases like mild hypertension, first degree heart block and left ventricular hypertrophy with about normal ejection fraction, *vamana* can be used safely.

Conclusion

The person suffering from *Hrid roga* may have either any structural or physiological defect; so *Vaman karma* in such diseases may complicate the condition and may produce cardiovascular collapse and cardiac arrest. If *Vaman karma* seems to be essential in a particular condition and its benefits outweigh the probable complications, it must be employed only after assessing the condition of both patient and disease. Only proper assessment with reasoning can offer success to the physicians in treatment of such dreadful diseases.

References

1. Sharma R K & Dash B, translator and expositor of Charaka samhita of Agnivesha with Ayurveda Deepika commentary by Charkrapani, vol.-6, 2ndEdition 2005, Chaukhambha Sanskrit Series, Varanasi, Siddhi Sthana 9/4. 326 p.
2. Sharma R K & Dash B, translator and expositor of Charaka samhita of Agnivesha with Ayurveda Deepika commentary by Charkrapani, vol.-4, 2ndEdition 2005, Chaukhambha

- Sanskrit Series, Varanasi, Chikitsa Sthana 26/3. 468 p.
3. Sharma R K & Dash B, translator and expositor of Charaka samhita of Agnivesha with Ayurveda Deepika commentary by Charkrapani, vol.-1, 1st Edition 2005, Chaukhamba Sanskrit Series, Varanasi, Sutra Sthana 17/30-40. 261 p.
 4. Sharma R K & Dash B, translator and expositor of Charaka samhita of Agnivesha with Ayurveda Deepika commentary by Charkrapani, vol.-4, 2nd Edition 2005, Chaukhamba Sanskrit Series, Varanasi, Chikitsa Sthana 26/77. 491 p.
 5. Prabhakaran D & Yusuf S, Guest editors: Cardiovascular disease in India: Lessons learnt & challenges ahead. Indian J Med Res 132, November 2010(cited on 2014 May 21), pp 529-530 (Available from: <http://icmr.nic.in/ijmr/2010/november/1109.pdf>)
 6. Sharma R K & Dash B, translator and expositor of Charaka samhita of Agnivesha with Ayurveda Deepika commentary by Charkrapani, vol.-6, 2nd Edition 2005, Chaukhamba Sanskrit Series, Varanasi, Siddhi Sthana 2/8. 178 p.
 7. Sharma R K & Dash B, translator and expositor of Charaka samhita of Agnivesha with Ayurveda Deepika commentary by Charkrapani, vol.-4, 2nd Edition 2005, Chaukhamba Sanskrit Series, Varanasi, Chikitsa Sthana 26/96. 496 p.
 8. Tripathi B, editor of Astanga Hridayam of Srimad Vagbhatta with Nirmala hindi commentary, Reprint edition 2009, Chaukhamba Sanskrit Pratisthan, Delhi, Chikitsa Sthana, 6/49. 635 p.
 9. Shastri A, editor of Sushruta Samhita of Sushruta with Ayurveda-tattva-Sandipika Commentry, 14th edition, 2003, Chukhabha Sanskrit Sansthan, Varanasi Chikitsa sthana 33/18, 143 p.
 10. Acharya Y T, editor of Sushruta samhita of Sushruta with Nibandhasangraha commentary of Sri Dalhanacharya, Reprint edition, 2010, Chaukhamba Surbharti Prakashan, Varanasi, Uttara Tantra, 43/11.727 p.
 11. Sharma R K & Dash B, translator and expositor of Charaka samhita of Agnivesha with Ayurveda Deepika commentary by Charkrapani, vol.-4, 2nd Edition 2005, Chaukhamba Sanskrit Series, Varanasi, Chikitsa Sthana 26/77. 491 p.
 12. Sharma R K & Dash B, translator and expositor of Charaka samhita of Agnivesha with Ayurveda Deepika commentary by Charkrapani, vol.-6, 2nd Edition 2005, Chaukhamba Sanskrit Series, Varanasi, Siddhi Sthana 2/9. 180 p.
 13. Myerburg R J, Catellanos A. Cardiovascular collapse, Cardiac arrest And Sudden Cardiac death Ch 39. In Fauci, braunwald, isselbacher, Wilson, Martin, Kasper, Hauser, Longo editors. Harrison's principals of internal Medicine Vol.1, 14th edition, 1998. Mc Graw-Hill, Ch 39, 222 p.
 14. Daroff R B, Martin J B. Faintness, syncope, Dizziness and vertigo. In Fauci, braunwald, isselbacher, Wilson, Martin, Kasper, Hauser, Longo editors. Harrison's principals of internal Medicine Vol.-1, 14th edition, 1998. Mc Graw-Hill, Ch 20, 101 p.
 15. Myerburg R J, Catellanos A. Cardiovascular collapse, Cardiac arrest And Sudden Cardiac death Ch 39. In Fauci, braunwald, isselbacher, Wilson, Martin, Kasper, Hauser, Longo editors. Harrison's principals of internal Medicine Vol.-1, 14th edition, 1998. Mc Graw-Hill, Ch 39, 222 p.

16. Boon NA, Fox K A, Bloomifield P. Diseases of Cardiovascular System. In Christopher Haslett, Edwin R Chilvers, John AA Hunter, Nichilas A Boon editors Davidson's Principals and Practice of Medicine, 18th edition. 1999, Churchill livingstone. Ch 3 p 234
17. Myerburg R J, Catellanos A. Cardiovascular collapse, Cardiac arrest And Sudden Cardiac death Ch 39. In Fauci, braunwald, isselbacher, Wilson, Martin, Kasper, Hauser, Longo editors. Harrison's principals of internal Medicine Vol.-1, 14th edition, 1998. Mc Graw-Hill, Ch 39, 223 p.
18. Tripathi B, editor Astanga Hrdayam of Srimad Vagbhatta with Nirmala hindi commentary, Reprint edition 2009 , Chaukhamba Sanskrit Pratisthan, Delhi, Chikitsa Sthana, 18/26. 222 p.
19. Sharma R K & Dash B, translator and expositor of Charaka samhita of Agnivesha with Ayurveda Deepika commentary by Charkrapani, vol.-6, 2ndEdition 2005, Chaukhamba Sanskrit Series, Varanasi, Siddhi Sthana 1/17. 150 p.
20. Shastri A, editor Sushruta Samhita of Sushruta with Ayurveda-tattva-Sandipika Commentry, 14thedition, 2003, Chukhabha Sanskrit Sansthan, Varanasi Chikitsa sthana 33/8, 142 p.
21. Sharma R K & Dash B, translator and expositor of Charaka samhita of Agnivesha with Ayurveda Deepika commentary by Charkrapani, vol.-6, 2ndEdition 2005, Chaukhamba Sanskrit Series, Varanasi, Siddhi Sthana 6/29. 270 p. and 6/71.284p.
22. Shastri A, editor Sushruta Samhita of Sushruta with Ayurveda-tattva-Sandipika Commentry, 14thedition, 2003, Chukhabha Sanskrit Sansthan, Varanasi Chikitsa sthana 34/3. 147 p & 34/19. 151p.
23. Sharma R K & Dash B, translator and expositor of Charaka samhita of Agnivesha with Ayurveda Deepika commentary by Charkrapani, vol.-6, 2ndEdition 2005, Chaukhamba Sanskrit Series, Varanasi, Siddhi Sthana 2/9. 180 p.
24. Guyton C, Hall E. Muscle Blood Flow And Cardiac Output During Exercise; The Coronary Circulation And Ischemic Heart Disease. In Textbook of medical physiology. 11th edition 2006, Saunders An imprint of Elsevier, Philadelphia, Ch 21. 249-250 p.
25. Guyton C, Hall E. Cardiac Output, Venous Return and Their Regulation. In Textbook of medical physiology. 11th edition 2006, Saunders An imprint of Elsevier, Philadelphia, Ch 20. 237 p.
26. Daroff R B, Martin J B. Faintness, syncope, Dizziness and vertigo. In Fauci, braunwald, isselbacher, Wilson, Martin, Kasper, Hauser, Longo editors. Harrison's principals of internal Medicine Vol.1, 14th edition, 1998. Mc Graw-Hill, Ch 20, 101 p.
27. Singer G G, Brenner B M. Fluid and electrolyte Disturbances. In Fauci, braunwald, isselbacher, Wilson, Martin, Kasper, Hauser, Longo editors. Harrison's principals of internal Medicine Vol.-1, 14th edition, 1998. Mc Graw-Hill, Ch 49, 272-273 p.
28. Swainson C P, Cumming A D. Disturbance in water, electrolytes and acid-base balance. In Christopher Haslett, Edwin R Chilvers, John AA Hunter, Nichilas A Boon editors Davidson's Principals and Practice of Medicine, 18th edition. 1999, Churchill livingstone. Ch 5 p 413-414
29. Complications of vomiting. Cited on 05/06/2014 (available from: <http://en.wikipedia.org/wiki/Vomiting>)

30. Daroff R B, Martin J B. Faintness, syncope, Dizziness and vertigo. In Fauci, Braunwald, Isselbacher, Wilson, Martin, Kasper, Hauser, Longo editors. Harrison's principals of internal Medicine Vol.-1, 14th edition, 1998. Mc Graw-Hill, Ch 20, 102 p.
31. Sharma R K & Dash B, translator and expositor of Charaka samhita of Agnivesha with Ayurveda Deepika commentary by Charkrapani, vol.-6, 2nd Edition 2005, Chaukhamaba Sanskrit Series, Varanasi, Siddhi Sthana 6/30. 270 p.
32. Sharma R K & Dash B. translator and expositor of Charaka samhita of Agnivesha with Ayurveda Deepika commentary by Charkrapani, vol.-1, 1st Edition 2005, Chaukhamaba Sanskrit Series, Varanasi, Sutra Sthana 9/10. 142 p.
33. Sharma R K & Dash B. translator and expositor of Charaka samhita of Agnivesha with Ayurveda Deepika commentary by Charkrapani, vol.-1, 1st Edition 2005, Chaukhamaba Sanskrit Series, Varanasi, Sutra Sthana 15/5. 237p.
34. Sharma R K & Dash B. translator and expositor of Charaka samhita of Agnivesha with Ayurveda Deepika commentary by Charkrapani, vol.-6, 2nd Edition 2005, Chaukhamaba Sanskrit Series, Varanasi, Siddhi Sthana 2/9. 180 p.
35. Sharma R K & Dash B. translator and expositor of Charaka samhita of Agnivesha with Ayurveda Deepika commentary by Charkrapani, vol.-6, 2nd Edition 2005, Chaukhamaba Sanskrit Series, Varanasi, Siddhi Sthana 2/9. 180 p.
36. Sharma R K & Dash B. translator and expositor of Charaka samhita of Agnivesha with Ayurveda Deepika commentary by Charkrapani, vol.-1, 1st Edition 2005, Chaukhamaba Sanskrit Series, Varanasi, Sutra Sthana 15/5. 237p.
37. Tripathi B, editor Astanga Hrdayam of Srimad Vagbhata with Nirmala hindi commentary, Reprint edition 2009, Chaukhamba Sanskrit Pratisthan, Delhi, Chikitsa Sthana, 18/26. 222 p.
38. Shastri A, editor Sushruta Samhita of Sushruta with Ayurveda-tattva-Sandipika Commentry, 14th edition, 2003, Chukhabha Sanskrit Sansthan, Varanasi Chikitsa sthana 33/8, 142 p.
39. Sharma R K & Dash B. translator and expositor of Charaka samhita of Agnivesha with Ayurveda Deepika commentary by Charkrapani, vol.-6, 2nd Edition 2005, Chaukhamaba Sanskrit Series, Varanasi, Siddhi Sthana 6/37. 274 p.
40. Sharma R K & Dash B. translator and expositor of Charaka samhita of Agnivesha with Ayurveda Deepika commentary by Charkrapani, vol.-6, 2nd Edition 2005, Chaukhamaba Sanskrit Series, Varanasi, Kalpa Sthana, 1/13. 12 p.
41. Sharma R K & Dash B. translator and expositor of Charaka samhita of Agnivesha with Ayurveda Deepika commentary by Charkrapani, vol.-6, 2nd Edition 2005, Chaukhamaba Sanskrit Series, Varanasi, Kalpa Sthana, 5/6. 49 p.
42. Sharma R K & Dash B. translator and expositor of Charaka samhita of Agnivesha with Ayurveda Deepika commentary by Charkrapani, vol.-6, 2nd Edition 2005, Chaukhamaba Sanskrit Series, Varanasi, Kalpa Sthana, 12/45. 116 p.
43. Sharma R K & Dash B. translator and expositor of Charaka samhita of Agnivesha with Ayurveda Deepika commentary by Charkrapani, vol.-6, 2nd Edition 2005, Chaukhamaba Sanskrit Series, Varanasi, Siddhi Sthana, 6/71. 284 p.

44. Sharma R K & Dash B. translator and expositor of Charaka samhita of Agnivesha with Ayurveda Deepika commentary by Charkrapani, vol.-6, 2ndEdition 2005, Chaukhamaba Sanskrit Series, Varanasi, Siddhi Sthana, 6/71-75. 284 p.
45. Shastri A, editor Sushruta Samhita of Sushruta with Ayurveda-tattva-Sandipika Commentry, 14thedition, 2003, Chukhabha Sanskrit Sansthan, Varanasi Chikitsa sthana 34/19, 151 p.
46. Sharma R K & Dash B. translator and expositor of Charaka samhita of Agnivesha with Ayurveda Deepika commentary by Charkrapani, vol.-6, 2ndEdition 2005, Chaukhamaba Sanskrit Series, Varanasi, Siddhi Sthana 2/27. 203 p.
47. Sharma R K & Dash B. translator and expositor of Charaka samhita of Agnivesha with Ayurveda Deepika commentary by Charkrapani, vol.-6, 2ndEdition 2005, Chaukhamaba Sanskrit Series, Varanasi, Siddhi Sthana 2/25. 203 p.
