



Available online through

www.jbsoweb.com

ISSN 2321 - 6328

Research Article

OBSERVATIONAL STUDY OF RASAKSHYA SYMPTOMS IN ISCHEMIC HEART DISEASE PATIENTS

Kalpna Dilip Sathe*, Vidyadhar Patil

Department of Kriya Sharir, MAM's Sumatibhai Shah Ayurved Mahavidyalaya, Malwadi, Pune, India

*Corresponding Author Email: Kalpna.sathe@yahoo.com

Article Received on: 23/06/14 Accepted on: 11/07/14

DOI: 10.7897/2321-6328.02563

ABSTRACT

Conceptual study, study of Rasa dhatu and IHD was done. The observational study was carried out on 10 diagnosed IHD patients having age group between 50-70 years and of either sex. The Rasa kshaya Parikshana was done and observations were recorded. The observational study reveals, 90 % patients shows Hritpida, 80 % patients shows symptom Klama (Fatigue), 70 % patients showed symptom Glani (Blacken outs), 70 % patients shows the symptom Shoonyata (feeling vacated) and 50 % patients shows the symptom Kampa (Trembling) at resting state. Due to vitiation of Rasa vaha strotas and Rasa dhatu (heart, blood vessels and blood), Rasa causes Sanga (obstruction) in Rasa vaha strotas, which leads into Rasa kshaya (impaired flow of rasa)? In Rasa kshaya Preenana karma (Providing nourishment) of Rasa dhatu gets reduced and symptoms of Rasa kshaya appear like 1) Chest pain (Hritpida) 2) Dryness (Rukshta) 3) Trembling (Kampa) 4) Feeling vacated (Shoonyata) 5) Thirst (Trushna) 6) Can't bear loud sound (Shabdasaahishnuta) 7) Blacken outs (Glani) 8) Palpitation (Ghattate?) 9) Tachycardia (Dravati?) 10) Tiredness on slight exertion (Tamyati?). According to modern science atherosclerotic coronary artery is main cause of IHD. IHD patients have Rasakshaya symptoms due to Sanga of Rasa dhatu in Rasavaha strotas.

Keywords: Rasa kshaya symptoms in Ischemic Heart Disease patients.

INTRODUCTION

The cardiovascular disease accounts for 12 million deaths annually and it is the commonest cause of death globally. Ischemic heart disease (IHD) is defined as myocardial impairment due to imbalance between coronary blood flow and myocardial requirement. The commonest cause of IHD is atherosclerotic coronary artery disease. Due to today's modern lifestyle changes, IHD is major disease in society. According to Ayurvedic literature, Rasa is aadya dhatu (first), which is responsible for nourishment of all body parts and other dhatu. The location of Rasa dhatu described in samhitas¹ Heart and attached ten dhamanis (arteries) are principal organs of Rasavaha strotas. Rasavaha strotas is responsible for Utpatti (formation), parinaman (transformation), Vahan (circulation) of Rasa dhatu. To maintain the health and proper functions of dhatu and other bhavpadartha (body elements), it is important that the respective strotas are healthy. Any deformity in the moolasthanas (principal organs) may lead to formation of disease. In IHD, the most common presenting symptom is Chest pain, which is manifested by atherosclerotic coronary arteries. It leads into myocardial ischemia, due to imbalance between coronary blood flow and myocardial requirement. According to Ayurvedic literature, rasa dhatu is responsible for nourishment of all body elements, the Waning of Rasa dhatu leads to different symptoms in body. The symptoms of Rasa kshaya mentioned in samhita are- Raukshya, shramah, shosha, glani, shabda asahishnuta, hritpida, kampa, shunyata, trushna.² Amongst all these symptoms, Hritpida (chest pain) is one of important symptom caused due to Sanga (obstruction) of rasa dhatu in Rasavaha strotas. In Rasa kshaya Preenana (providing nourishment) karma of

Rasa dhatu is hampered, which leads to symptoms like chest pain, trembling, thrust etc.

Aim

Aim was to observe Rasa kshaya symptoms in IHD patients.

Review of Literature

Sthana (Location) of Rasa Dhatu- Rasa vaha strotas³

According to Charaka, heart and attached ten Dhamanis (arteries) are principle organs of Rasavaha strotas (circulatory system).

Rasavaha strotas is responsible for

Utpatti (formation), Parinaman (transformation) and Vahan (circulation) of Rasa Dhatu; chakradutta clarifies that the nutritive product of digestion, the Ahara Rasa or poshak Rasa Dhatu and the stable poshya or densely formed nutritive elements are both co-located in the principal organs.

Rasavaha strotas and Dhamani

According to Sushrutacharya, location of Rasa Dhatu is heart and 24 dhamanis (vessels) emerging from heart and circulating in the entire body for nourishment of all body elements.⁴ On the other hand, Dalhanacharya states that by reading the word heart in the verse, one should not restrict the location of Rasa Dhatu to only heart. Its location should be considered to extend up to nearby region also.

Panchabhoutika Sanghatana

According to Vyapadeshastu bhooyasa nyaya (law of abundance), Rasa has Apa mahabhoota predominance. Due to its Drava (fluid) nature it circulates in entire body to provides nutrition and nourishment to all body parts and other Dhatu.⁵

Rasa Swarupa

Charaka, Sushruta and Dalhanacharya stated that Rasa is Soumya (mild) and Apa mahabhoota pradhana. Due to its Soumya (mild) and Apa (watery) nature it performs its functions like snehana (lubrication), Jeevana (life), Dharana (maintenance) etc.⁶ According to Vagbhata, Rasa Dhatu is like kapha dosha. All properties of kapha dosha can be applied to Rasa Dhatu. The characteristic features of Rasa Dhatu are similar to those of kapha dosha, exhibiting the attributes of Soumya (mild), drava (fluid), Snigdha (Unctuous) and guru and shweta (whitish like plasma and lymph) Varna.

Circulation of Rasa Dhatu

According to Charaka, to stimulate rasa circulation in heart and its supply to all over the body is the main function of vyana. Rasa circulates in entire body at a time. This act of circulation is ceaseless and done all the time. Charakacharya, in his text has explained Rasa gati (circulatory force and velocity).⁷

- Ajastra- Continuously or ceaselessly
- Ugapata-At once
- Sarvataha- In all directions.

As Rasa is adya (first) Dhatu, it is responsible for nutrition for all other Dhatus, so its circulation in entire body is important to provides nourishment to other body elements. If the Rasa circulation stops somewhere due to morbidity in channels it causes obstructive disorders. According to Bhela samhita, Rasa is forced in entire body through sira which are said to get originated from heart. Hridaya (heart) is main location of Rasa Dhatu, rasa dhatu is circulated in whole body through sira (vessels), which flow in all directions by force (vikshep), velocity (urdhwa gati), pressure (tiryak gati), gravity (adho gati) and propagation (aakunchan- prasaran) till the capillaries (kedar eva kulya- like channels of field). It also passes in the tissues by diffusion/osmosis (upasnehana).⁸ According to Sushrutacharya; there are three types of Rasa gati like

1. Shabda (Sound)
2. Archi (fire)
3. Jala (water)

He stated that, Rasa circulates in the whole body in a subtle way like continuous waves of sound, fire and water. This example illustrate three types movement of Rasa such as velocity and direction of waves of sound obliquely (Tiryaka), like fire it goes upwards (Urdva) and like water it goes down words (Adho).

Rasa Dhatu Pramana (Quantity)

The Pramana (quantity) of Rasa Dhatu is nine Anjali (paw full).⁸

Functions of Rasa Dhatu

Preenana means pleasing, gratifying, soothing and the act of satisfying. According to Arundatta, Preenana means Apyayana, As Rasa is drava (liquid) and Soumya (mild) in nature, it has Apa mahabhoota predominance.¹⁰ Rasa Dhatu is formed by process of Rasagni (enzyme activity) on Ahara Rasa (chyle) so it contains Poshak bhag (nutritive part) of all other Dhatu (tissues). Due to its drava (liquid) and Soumya (mild) nature it circulates in the whole body to provide nourishment to all body elements. It provides nourishment to the indreeyas too. It also has effect on mind by keeping it fresh. Rasa Dhatu carries Ahara Rasa to each body entity and keeps them fresh.

Raktapushti

It is also important function of Rasa Dhatu. As Rasa provides nutrition to all Dhatus, but according to kedara Kulya Nyaya it provides nutrition to its nearest Dhatu, Rakta Dhatu (solid components of blood).

Symptoms of Rasa Kshaya

Causes of Rasa kshaya¹¹

- Chest pain (Hritpida) Dryness (Rukshta)
- Trembling (Kampa) Feeling vacated (Shoonyata)
- Thirst (Trushna) can't bear loud sound (Shabdasahishnuta)
- Blacken outs (Glani) Palpitation (Ghattate)
- Tachycardia (Dravati) Tiredness on slight exertion (Tamyati)

Symptoms of Rasa Vriddhi

Nausea
Water brash
Increased salivary secretions
Breathlessness
Cough
Somnolence¹²

Causes of morbidity of Rasa vaha strotas

Those who eat heavy food, cold, too unctuous and in excessive quantity and have mental stress suffer from morbidity of Rasa vaha strotas.¹³

Rasa Pradoshaja vikara

(Disorders due to vitiated Rasa dhatu)

Aversion of food, anorexia, indigestion, body ache, fever, nausea, heaviness, cardiac disorder, anaemia, obstruction of channels, emaciation, abnormal taste, lassitude, premature wrinkles, greying of hair, loss of vision. According to Sushrutacharya, Cardiac disorder is caused due to vitiation of Rasa dhatu or may be vice versa.¹⁴

Common symptoms of morbidity of Strotas¹⁵

Enhanced flow (Atipravritti) Obstruction in channels (Sanga)
Formation of nodule (Sira Granthi)
Flow of contents in wrong direction (Vimarga gamana)

Importance of Rasa Dhatu

Rasa is the essence of food and fluid densely present in all Dhatu.

The Purusha (organism) originates from Rasa and is continuously nourished by Rasa.¹⁶

IHD (Ischemic Heart Disease)

Definition

The WHO (world health organisation) has defined ischemic heart disease (IHD) as myocardial impairment due to imbalance between coronary blood flow and myocardial requirements. The most common cause of IHD is atherosclerotic coronary artery disease (CAD). However, imbalance between supply and demand can be caused by other conditions as well, including aortic valve disease, hypertrophic cardio myopathy, coronary artery spasm etc.

Pathophysiology of IHD

Myocardial ischemia occurs as a result of imbalance between O₂ supply and demand. Myocardial oxygen demand is reduced in conditions like-

- Coronary artery disease due to atherosclerotic lesion obstructing the vessel.
- Spasm of coronary arteries.
- Coronary artery embolism.
- Paroxysmal supra ventricular tachycardia.
- Severe anaemia, carbon monoxide poisoning.
- Thyroid disorders.
- Aortic stenosis
- Hypertrophic cardio myopathy.

When the vessel is critically narrowed, it compromise blood supply to the myocardium during the periods of stress then a clinical situation of angina results.

Aetiology

- **Sex-** The disease is more common in men compared to premenopausal women in a ratio of 25:1.
- **Hyper lipidaemia-** Diets high in lipid content, especially in saturated fats, which in turn increase serum cholesterol levels, are linked to the development of atherosclerosis.
- **Hypertension-** Several epidemiological studies have shown an association between hypertension and Atheroma.
- **Smoking-** There is definite dose related link between cigarette smoking and coronary artery disease.
- **Diabetes mellitus-** Diabetes reportedly doubles the risk of atherosclerotic coronary heart disease. Diabetes is also associated with obesity, hypertension and increased serum cholesterol.
- **Heredity-** A family history of premature atherosclerotic coronary heart disease is an important risk factor.
- Other factors are stress, sedentary lifestyle, lack of physical exertion is also associated with IHD.¹⁷

Angina Pectoris

The common feature of angina is pain which is usually sub sternal, consisting of feeling of heaviness with radiation of both arms or commonly to the ulnar border of the left arm. It may radiate to jaw, teeth, occipital region, back or epigastric region. The duration of pain or

equivalent symptoms is usually only few minutes. The discomfort is typically relived by nitro glycerine.

Types of Angina

The types of angina includes

- Stable angina.
- Unstable angina.
- Prinzmetal angina.
- Post infarction unstable angina.

Stable angina or effort angina

It occurs on known physical efforts and is relived with rest, standing or sublingual nitro-glycerine. Pain gets aggravated in cold weather, after emotional upset, by sexual intercourse, at high altitude and by straining on stool. It usually last for few minutes. Post prandial angina occurs a few minutes after meals.

Precipitating factors of angina pectoris

- Heavy physical exertion, climbing stairs/uphill
- Sudden exposure to cold.
- Emotional stress.
- After heavy food.
- Bad dreams (nocturnal angina)

Unstable angina

It is also called as intermediate coronary syndrome and pre infarction angina or angina at rest. It is a serious form of angina and needs special attention. There is a higher incidence of left main coronary artery disease in these patients.

Unstable angina includes

- Angina of recent onset(less than 60 days)
- Stable angina with symptoms more severe in intensity, frequency or duration and more easily provoked.
- Angina at rest
- Angina following myocardial infarction.

Prinzmetal angina

It is also called as variant angina. It was described by Prinz metal in 1959. The pain usually occurs at night or in early morning hours. It is caused by the spasm of the coronary artery. The spasm can be induced by smoking, hyperventilation. The pain is relieved by sublingual nitro glycerine.

Post infarction angina

Some patients with myocardial infarction develops angina 2 days to 8 weeks following the acute infarction. Most patients have multi vessel disease.

MATERIAL AND METHODS

Observational study

The Observation of Rasa kshaya symptoms was done in 10 patients of IHD selected randomly (First come first) on the basis of inclusion and exclusion criteria.

- Place of study- Pune region.
- Sample size-10

Inclusion criteria

- Age- 50-70 years
- Gender- Patients of either gender.
- Diagnosed IHD patients.

Exclusion criteria

Acute MI patients

Steps of Observational study

- 10 patients of IHD were selected randomly.
- Rasavaha strotas Parikshan was done.
- Rasa kshaya symptoms Parikshan was done by interview / questionnaire
- Observations were recorded.
- Statistical analysis done by frequency %
- Inference was drawn.

RESULTS**Rasa kshaya Parikshana**

Symptom	No.of patients	Percentage
Rukshata	4	40 %
Shrama	7	70 %
Shosha	4	40%
Glani	7	70
Shabdashishnuta	3	30 %
Hritpida	9	90 %
Kampa	5	50 %
Shoonyata	7	70 %
Trushna	4	40 %
Klama	8	80 %

DISCUSSION

The person is said to be an organism of structural and functional units called as strotas. There are different types of strotas as many as corporeal entities. All entities do not arise or decay without strotas. The strotas is defined as transporting passages of Dhatus undergoing transformation. The strotas is responsible for Utpatti (origin), parinaman and vahan (circulation) of all body entities. Any morbidity or vitiation of strotas may cause formation of diseases of that respective strotas and body entity of that strotas. The symptoms of the affected strotas carrying dhatu are the same as those of respective dhatu. As Rasa is aadya dhatu, which is responsible for nourishment of other dhatu and all body entities, the Rasa vaha strotas should be healthy. Any morbidity or vitiation of Rasavaha strotas leads to vitiation of Rasa dhatu, which causes many diseases like Hridroga. There are common symptoms mentioned in samhitas, which are caused due to vitiation of strotas.

The common symptoms are

- Enhanced flow. (Atipravritti)
- Obstruction in channels (Sanga)
- Formation of nodule (Sira Granthi)
- Flow of contents in wrong direction (Vimarga gamana).

From these symptoms, Sanga (Obstruction) is one of the important symptoms mentioned in the samhita. As Rasa is Drava dhatu, it has Apa mahabhoota predominance. The function of Rasa dhatu is Preenana (Providing nourishment). To perform this function Rasa should be

circulated continuously and ceaselessly 24 hours in body. When Rasavaha strotas is vitiated, it causes Sanga of Rasa dhatu. Due to this vitiated Rasa dhatu, Kshaya (Waning) of Rasa occurs in Rasavaha strotas (Hridaya and dhamani) and later on in all over the body. Due to this Rasa kshaya Preenana (Providing nourishment) karma of Rasa dhatu get reduced, which causes different symptoms. From those symptoms Hritpida (chest pain) is one of important symptom. According to modern science, atherosclerotic coronary artery is main cause of IHD, in which chest pain is main presenting symptom. It occurs due to imbalance between coronary blood flow and demand as a result myocardial ischemia occurs.

Discussion regarding Observational Study

The symptom Shrama was present in 70 % patients. The 90 % patient's shows symptom Hritpida. It is due to sanga (obstruction) of Rasa dhatu in Rasavaha strotas. In which Preenana karma of Rasa dhatu get reduced. The symptoms, which are caused due to Rasa kshaya are

- Klama was present in 80 % patients
- Shoonyata was present in 70 % patients.
- Kampa was present in 50 % patients.

All these symptoms are present due to Sanga (obstruction) of Rasa dhatu in Rasavaha strotas, which is caused by Rasa kshaya. In Rasa kshaya Preenana karma of Rasa dhatu (providing nourishment) gets reduced and caused abnormality in strotas.

CONCLUSION

From literary and observational study, it can be concluded that, in IHD patients, vitiation of Rasa dhatu and Rasa vaha strotas (blood and heart, blood vessels) occurs. Rasa causes Sanga (obstruction) in Rasa vaha strotas, which leads into Rasa kshaya (impaired flow of rasa). In Rasa kshaya Preenana karma (Providing nourishment) of Rasa dhatu gets reduced and symptoms of Rasa kshaya appear like 1) Chest pain (Hritpida) 2) Dryness (Rukshata) 3) Trembling (Kampa) 4) feeling vacated (Shoonyata) 5) Thirst (Trushna) 6) Can't bear loud sound (Shabdashishnuta) 7) Blacken outs (Glani) 8) Palpitation (Ghattata?) 9) Tachycardia (Dravati?) 10) Tiredness on slight exertion (Tamyati?). According to modern science, atherosclerotic coronary artery is the main cause of IHD, which causes imbalance between coronary blood flow and demand. Due to this imbalance myocardial ischemia occurs and symptoms of IHD appear.

REFERENCES

1. Vaidya Yadavji Trikamji Acharya, Charaka Samhita of agnivesha, revised by Charaka and Drudhabala with Ayurveda dipika commentary by chakrapanidutta, Munshiram Manoharlal Publication Pvt. Ltd, 4th edition, Cha.Vi. 5/8; 1981. Vaidya Yadavji Trikamji Acharya, Sushruta Samhita with the Nibandna Commentary by Dalhanacharya, Choukhamba Surabharti Prakashana, Varanasi. Su.Sha. 9/12; 1994.
2. Hemadri, Pandit Hari Sadashiv Shastri, Ashtang Hridaya, Vagbhata with the commentaries Sarvang Sunder and Ayurved Rasayana, Choukhamba Surbharti Prakashana, Varanasi, Ash. Hru.Su. 11/17; 1997. Vaidya Yadavji Trikamji Acharya, Sushruta Samhita with the Nibandna Commentary by Dalhanacharya, Choukhamba Surabharti Prakashana, Varanasi, Su.Su. 15/9; 1994.
3. Vaidya Yadavji Trikamji Acharya, Charaka Samhita of agnivesha, revised by Charaka and Drudhabala with Ayurveda dipika

- commentary by chakrapanidutta, Munshiram Manoharlal Publication Pvt. Ltd, 4th edition, Cha.Vi. 5/8; 1981.
4. Vaidya Yadavji Trikamaji Acharya, Sushruta Samhita with the Nibandna Commentary by Dalhanacharya, Choukhamba Surabharti Prakashana, Varanasi. Su.Su. 14/3. Su.Sha. 9/12; 1994.
 5. Vaidya Yadavji Trikamaji Acharya, Sushruta Samhita with the Nibandna Commentary by Dalhanacharya, Choukhamba Surabharti Prakashana, Varanasi. Su.Su. 14/4., Su.Su. 15; 1994.
 6. Vaidya Yadavji Trikamaji Acharya, Sushruta Samhita with the Nibandna Commentary by Dalhanacharya, Choukhamba Surabharti Prakashana, Varanasi. Su.Su.14. Su.Su.15; 1994. Vaidya Yadavji Trikamaji Acharya, Charaka Samhita of agnivesha, revised by Charaka and Drudhabala with Ayurveda dipika commentary by chakrapanidutta, Munshiram Manoharlal Publication Pvt. Ltd, 4th edition, Cha. Sha.7; 1981. Hemadri, Pandit Hari Sadashiv Shastri, Ashtang Hridaya, Wagbhata with the commentaries Sarvang Sunder and Ayurved Rasayana, Chokhamba Surbharti Prakashana, Varanasi, Ash. Hri.Su. 11/8; 1997.
 7. Vaidya Yadavji Trikamaji Acharya, Charaka Samhita of agnivesha, revised by Charaka and Drudhabala with Ayurveda dipika commentary by chakrapanidutta, Munshiram Manoharlal Publication Pvt. Ltd, 4th edition, Cha. Chi. 15/36; 1981.
 8. Vaidya Yadavji Trikamaji Acharya, Charaka Samhita of agnivesha, revised by Charaka and Drudhabala with Ayurveda dipika commentary by chakrapanidutta, Munshiram Manoharlal Publication Pvt. Ltd, 4th edition, Cha. Sha. 7/15; 1981.
 9. Vaidya Yadavji Trikamaji Acharya, Sushruta Samhita with the Nibandna Commentary by Dalhanacharya, Choukhamba Surabharti Prakashana, Varanasi. Su.Sha. 7/3, Su. Su.14/16; 1994.
 10. Vaidya Yadavji Trikamaji Acharya, Sushruta Samhita with the Nibandna Commentary by Dalhanacharya, Choukhamba Surabharti Prakashana, Varanasi. Su. Su. 15/5; 1994.
 11. Vaidya Yadavji Trikamaji Acharya, Charaka Samhita of agnivesha, revised by Charaka and Drudhabala with Ayurveda dipika commentary by chakrapanidutta, Munshiram Manoharlal Publication Pvt. Ltd, 4th edition, Cha. Su 17/ 64; 1981. Vaidya Yadavji Trikamaji Acharya, Sushruta Samhita with the Nibandna Commentary by Dalhanacharya, Choukhamba Surabharti Prakashana, Varanasi. Su. Su.15/9; 1994. Hemadri, Pandit Hari Sadashiv Shastri, Ashtang Hridaya, Wagbhata with the commentaries Sarvang Sunder and Ayurved Rasayana, Chokhamba Surbharti Prakashana, Varanasi, Ash. Hri. Su. 11/17, Arundatta; 1997.
 12. Vaidya Yadavji Trikamaji Acharya, Sushruta Samhita with the Nibandna Commentary by Dalhanacharya, Choukhamba Surabharti Prakashana, Varanasi. Su.Su. 15/14; 1994. Hemadri, Pandit Hari Sadashiv Shastri, Ashtang Hridaya, Wagbhata with the commentaries Sarvang Sunder and Ayurved Rasayana, Chokhamba Surbharti Prakashana, Varanasi, Ash. Hri. Su.11/7-8; 1997.
 13. Vaidya Yadavji Trikamaji Acharya, Charaka Samhita of agnivesha, revised by Charaka and Drudhabala with Ayurveda dipika commentary by chakrapanidutta, Munshiram Manoharlal Publication Pvt. Ltd, 4th edition, Cha. Vi. 5/ 13; 1981.
 14. Vaidya Yadavji Trikamaji Acharya, Charaka Samhita of agnivesha, revised by Charaka and Drudhabala with Ayurveda dipika commentary by chakrapanidutta, Munshiram Manoharlal Publication Pvt. Ltd, 4th edition, Cha. Su 28/ 9; 1981. Vaidya Yadavji Trikamaji Acharya, Sushruta Samhita with the Nibandna Commentary by Dalhanacharya, Choukhamba Surabharti Prakashana, Varanasi. Su. Su.24/9; 1994.
 15. Vaidya Yadavji Trikamaji Acharya, Charaka Samhita of agnivesha, revised by Charaka and Drudhabala with Ayurveda dipika commentary by chakrapanidutta, Munshiram Manoharlal Publication Pvt. Ltd, 4th edition, Cha. Vi. 5/ 24; 1981.
 16. Vaidya Yadavji Trikamaji Acharya, Sushruta Samhita with the Nibandna Commentary by Dalhanacharya, Choukhamba Surabharti Prakashana, Varanasi, Su. Su. 14/11, Su. Su; 1994.
 17. Paul Ananad, N Shaha. API textbook of medicine, association of Physicians of India, 6th edition; 1999. Anthony S. Fauci Harrison's principles of Internal medicine, Mac grow Hill Publications, 18th edition; 2008.

Cite this article as:

Kalpana Dilip Sathe, Vidyadhar Patil. Observational study of Rasakshya symptoms in ischemic heart disease patients. J Biol Sci Opin 2014;2(5):279-283 <http://dx.doi.org/10.7897/2321-6328.02563>

Source of support: Nil; Conflict of interest: None Declared