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ISSN 2321 - 6328

Research Article

EVALUATION OF DIET AND LIFESTYLE IN ETIOPATHOGENESIS OF AMLAPITTA: A SURVEY STUDY

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Article Received on: 17/02/15 Accepted on: 24/03/15

DOI: 10.7897/2321-6328.03217

ABSTRACT

Mind and body are inseparable entities influencing each other throughout the life. Now a day, due to abnormal lifestyle, increased pace of life, changes in food habits and behavioral pattern people become stressful which lead them towards several psycho-somatic disorders. Among them, Amlapitta is one of the common conditions. For the present study, to evaluate the role of diet and lifestyle in etio-pathogenesis of Amlapitta a standardized questionnaire in the form of proforma incorporating types of foods (Madhura, Amla and Lavana Rasayukta Ahara etc.) and lifestyle (Divaswapna, Ratrijagarana and Manasika Bhavas etc) was prepared. Total 100 patients having classical signs and symptoms of Amlapitta and age in between 18-80 years attending the OPD of Kayachikitsa P. D. Patel Ayurveda Hospital, Nadiad, Gujarat, India were registered in the present study. The data reflects that maximum patients were taking Viruddhahara (combination of incompatible food items), eating uncooked, half cooked, overcooked food or stale food, excessive use of very hot, unctuous, dry, sour and liquid food articles and dietary rules like Akaal bhojana, Kale Anashana, Adhyashana, Ati drit bhojana, Shitam Ushnikritam, Atanmana bhujitam, which play a key role in etio-pathogenesis of Amlapitta.

Keywords: Lifestyle, Amlapitta

INTRODUCTION

21st century is modern era of competition in life. It is full with stress to achieve more and more goals. The needs of the human being are infinite but the availability of resources to fulfill the endless growing demands is finite. These result into an unhealthy lifestyle with a fast pace, changes in, food habits and behavioral pattern. This leads them towards various psychic or psycho-physiological disorders. Digestive abnormalities are one of them. Sushruta Samhita mentions that in a condition with a disturbed psyche, even wholesome food taken in proper quantity does not get properly digested¹. Faulty lifestyle and food habits hamper the process of digestion and produce hyperacidity, gastritis, acid-peptic disorder, dyspepsia and anorexia² and 50 % of gastrointestinal disorders³. All these symptoms can be covered under the broad title of Amlapitta in Ayurveda⁴. Amlapitta is the GI disorder described in Ayurvedic text books, that closely resembles with Gastritis in modern science and in chronic stage it may lead to ulcerative conditions⁵. The prevalence rate of Gastritis was 2.7 million in USA (approximately 1 in 100 people)⁶. In India it is 10 million and that of peptic ulcer is 5 million. Mortality rate is 703 and that of peptic ulcer is 6500. Hospitalization of Gastritis is 600 and that of peptic ulcer is 630000. Physician office visit of Gastritis is 3 million, prescription of Gastritis is 2 million and disability of Gastritis is 34,000.⁷ Classical signs and symptoms of the disease entity described under the heading of Amlapitta, like heart burn, abdominal pain, sour-bitter belching, reflexes of food taken, nausea, loss of appetite⁸ etc. has become a very common cause of hospital visits worldwide⁹. Therefore, this is also an attention seeking problem for the Ayurvedic scholars.

Amlapitta as a disease was described first time by Acharya Kashyap in Kashyap Samhita with its Purvarupa (Premonitory symptom), Rupa (Sign and symptom), Prakara (Type) and Chikitsa (Treatment)¹⁰. Though it is very common disease encountering the present population with more or less severity, it is the one which bears the direct impact of the dietic errors that a person indulges. Nidanans (Causative factors) of Amlapitta are specific type of diet like excessive use of very heavy, unctuous, dry, sour, liquid and stale food articles and faulty dietary habits like practice of day time sleep taking food, before the digestion of previously taken food and mental stress are chiefly associated ones¹¹. After going through the literally description available in Kashyap Samhita, it may be assumed that specific diet, dietic habits and lifestyle are responsible in the manifestation of Amlapitta. To treat any kind of disorder completely, it is essential for a physician to know the factors responsible for it and therefore, to search out the specific relativity of these factors like diet, dietary rules in the pathology of the disease and to find out awareness of patients regarding rules of taking food articles a local survey study was conducted. Till now, no work has been done on this subject and author has tried to find out the specific relativity of these factors in the manifestation of Amlapitta.

Aims and Objectives

- To study the role of diet and lifestyle in etio-pathogenesis of Amlapitta on the basis of classical literature.
- To assess the inter-relationship among Amlapitta, diet and lifestyle through survey study.

MATERIALS AND METHODS

Selection of the patient

All the patients having classical signs and symptoms of Amlapitta and age in between 18-80 years attending the OPD of Kayachikitsa P. D. Patel Ayurveda Hospital, Nadiad, Gujarat, India from January 2012 to July 2012 were registered with kind permission from Institutional ethical committee of P.D. Patel Ayurveda Hospital, Nadiad, Gujarat, India in this study without any bar of cast, religion or sex.

Inclusion criteria

All the patients who were fulfilling minimum four clinical criteria of Amlapitta (Table 1) based on detailed history according to classical references, selected for the present study.

Exclusion criteria

Patients having age up to 17 years and above 80 years, suffering from any malignant diseases, pancreatitis, gastric or duodenal ulcers or any other endocrine disorders like hyperthyroidism etc were excluded from the study. They were screened to rule out other disorders like Vidagdhajirna, Pittaja Grahani, and Pittaja Atisara etc. (Table 2)

Ethical Clearance

This survey study was approved by the institutional ethical committee of the P. D. Patel Ayurveda hospital by the number dated 28-2-2013, IEAC/2013-14/203 and meets the standards of the declaration of Helsinki. All subjects' informed consent was given to the patients.

Methods for the study

For the present study, a standardized questionnaire in the form of proforma incorporating types of foods and lifestyle was prepared. A registered patient was asked about his daily routine to know a real cause for the manifestation of disease like type, time, frequency, quantity and rules for taking food. Special interrogation was done regarding Viruddhahara (combination of incompatible food items), Adhyashana (eating before digestion of previously taken food), eating uncooked, half cooked, overcooked food or stale food, excessive use of very hot, unctuous, dry, sour and liquid food articles, habitual sleeping after eating, suppression of natural urges. These factors vitiate Agni; resulting into incomplete conversion of food items during digestion which is described in Ayurveda as Vidagdha denoting acidification. This Vidagdhanna (acidified food and acidic atmosphere) in the stomach produces the disease Amlapitta.

Assessment of the Result

In this survey study, the collected data was recorded in a specially prepared proforma. Patients having age in between 18-80 years and minimum five classical signs and symptoms of Amlapitta were selected in the study without any bar of cast, religion and sex etc. Type of diet and dietary method of each and every patient was assessed. Onset of the disease and its relativity with lifestyle was assessed. Total 100 patients were surveyed and the data collected was recorded in a specially prepared questionnaire. Assessment was done to assess the role of diet and lifestyle in the etio-pathogenesis of Amlapitta disease.

Table 1: Signs and symptoms of Amlapitta

No.	Signs and symptoms	Duration
1.	<i>Tikta-Amlodgara</i>	
2.	<i>Hritkantha daha</i>	
3.	<i>Udaradaha</i>	
4.	<i>Utklesha</i>	More than a year
5.	<i>Chhardi</i>	
6.	<i>Klama</i>	
7.	<i>Avipaka</i>	
8.	<i>Gaurava</i>	

Table 2: Differential diagnosis

No.	Diseases	Ruled out by
1.	<i>Vidagdhajirna</i>	Patient feels better on fast in Vidagdhajirna
2.	<i>Pittaja Grahani</i>	Muhurbaddham muhurdravam mala pravriti
3.	<i>Pittaja Atisara</i>	Mainly complaints for Sadaha, Sadrava, Bahu mala pravriti

Table 3: Chief complaint wise distribution

No.	Symptoms	Percentage (%)
1.	Tikta-amlodgara	94%
2.	Hritkantha daha	92%
3.	Utklesha	68%
4.	Klama	89%
5.	Avipaka	98%
6.	Gaurava	94%
7.	Chhardi	60%
8.	Udaradaha	76%

Table 4: Demographic data

		No. of patients & Percentage (%)
Age	1-15 yr	2
	16-70 yr	95
	70-80 yr	3
Sex	Male	58
	Female	42
Religion	Hindu	84
	Muslim	16
Marital status	Married	89
	Unmarried	09
	Widow	2
Education	Educated	90
	Uneducated	10
Occupation	Housewife	34
	Laborer	18
	Service	19
	Retired	07
	Business	18
Socio-economical status	Lower class	30
	Lower middle class	65
	Upper middle class	05
Habitat	Suburban	15
	Urban	60
	Rural	25
Prakriti	<i>Vata-pittaja</i>	48
	<i>Pitta-kaphaja</i>	36
	<i>Kapha-vataja</i>	16
Manasika prakriti	<i>Rajasika</i>	84
	<i>Tamasika</i>	16

Table 5: Observations related to diet and lifestyles

		No. of patients & Percentage (%)
Type of diet	Vegetarian	80
	Mixed	20
Rasa dominance	Katu	70
	Amla	38
	Lavana	43
	Madhura	42
Guna dominance	Guru	47
	Shita	40
	Ushna	60
	Drava	30
	Ruksha	40
Faulty dietary habits	Viruddhashana	53
	Adhyashana	50
	Vishamashana	43
	Shitam ushnikritam	60
	Kaale anashanam	57
	Akaal bhojan	60
	Chira siddham	43
	Atidruta	16
	Ativilambita	04
	Ajalpa + Ahasana	40
	Tanmana bhunjita	10
Agni	Manda	74
	Vishama	22
	Tikshna	01
	Sama	03
Addiction	No addiction	15
	Tobacco – Chewing/Smoking	39
	Tea	43
	Alcohol	03
Exercise	Regular	18
	Occasional	42
	No exercise	40
Sleep	Sound	10
	Interrupted	22
	Disturbed	56
	Delayed	12

Mental factors	Chinta	57
	Bhava	06
	Krodha	42
	Diwaswap	35
	Vega vidharana	18
Chronicity	1 yr	55.45%
	2-5 yr	23.34%
	> 5 yr	21.21%
Srotas	Annavaaha Srotas	96
	Rasavaaha Srotas	90
	Purishavaaha Srotas	25
	Udakaavaaha Srotas	25

OBSERVATION AND RESULTS

The demographic data of 100 patients (Table 4) reveals that mean value of age was 38 year. 58 % were male and 42 % were female. 84 % were Hindu, 59 % patients were educated and 10 % were illiterate. 89 % patients were married and 09 % were unmarried. It was found that total 60 % patients were belonging to urban area, 25 % patients were from rural area. Majority of patients (65 %) were lower middle class, 30 % and 5 % were lower and upper middle socio- economic status respectively. 34 % were house wives, 19 % were job workers and 18 % had their own business. 60 % of the patients were vegetarian and 40 % were taking mixed diet (Vegetarian and non-vegetarian diet). 80 % patients had Mandagni followed by Vishamagni (16 %) (Table 5); intake of water in between meal was in 42.42 % of patients. 65 % of the total patients have any type of addiction like tobacco chewing or smoking (37 %), tea or coffee (51 %), alcohol (5 %). 60 % patients were taking Ushna bhojana (Fresh) and 40 % was taking Shita bhojana (Stale). 41 % of the patients were taking Snigdha and 40 % were taking Ruksha bhojana in their diet. Total 53 % patients were taking Samashana (taking wholesome and unwholesome diet together) and Viruddhashana respectively. In the present study 43 % patients were taking Chirasiddham Ahara (Over cooked food) and 60 % were taking Shitam Ushnikritam Ahara (taking stale food after heating it again) and use specific place for meal with all necessary articles and instruments. Akaal Bhojana (eating food without hunger) and Kale Anashanam (not to take food on hunger) were in 60 % and 57 % respectively. Among 100 persons only 10 reported to have their meals with due concentration. Atidrita and Ativilambita bhojana were found in 16 % and 04 % of the patients respectively. Total 68 % patients were preferred Vidahi Ahara followed by 50 %, 47 %, 41 % patients were taking Abhishyandi, Atiguru and Atisnigdha Ahara, maximum patients (50 %) had tendency to indulge in Adhyashana (Eating before digesting the previously taken food). 70 % preferred Katu Rasa followed by 43 %, 38 %, 42 % patients Lavana, Amla and Madhura rasa, respectively. 57 % were affected by Chinta (Mental stress) followed by 42 %, 6 % by Krodha (Anger) and Bhaya (fear) respectively. 56 % had complained of disturbed sleep. Maximum number of patients (55.45 %) reported the chronicity of disease 0-1 year. 98 % patients had Dandvaja Prakriti with highest number of patients (48 %) having Vata-Pittaja Prakriti followed by 36 % patients had Kapha-Pitta Prakriti. Most of the patients (94.50 %) had Madhyama Sattwa. 56 % patients had Vyamishra Satmya while 34 % had Ekarasa Satmya and 10 % had Sarvarasa Satmya. 47.25 % patients had Madhyama Abhyavaharana Shakti followed by 40.65 % having Avara Abhyavaharana Shakti. Similarly, maximum patients (46.15 %) reported Avara Jarana Shakti followed by 41.75 % having Madhyama Jarana Shakti i.e. their digestive power. Annavaaha and Rasavaaha Srotodushti were found in 96 % of the patients and 90 % have found Purishavaaha Srotodushti Lakshana

and Raktavaaha and Udakaavaaha Srotodushti were found 25 % of the patents in each.

Signs and Symptoms

Cardinal symptoms of Amlapitta were found Tikta-Amlodgara (94 %), Hritkanthadaha (92 %), Utklesha (68 %), Klama (89 %), Avipaka (98 %), Gaurav (94 %), Chhardi (60 %) and Udaradaha (76 %) in total 100 patients (Table 3). While associate symptoms like Shiroruja, Bhrama, Vidbheda, Vitsanga were found 18 %, 54 %, 24 % and 19 % respectively. Kandu and Kotha as an Upadravas were found in 21 % patients.

DISCUSSION

Majority of the patients was from the age group of 18-50 years¹². The people of this age group are affected by this disease more, because it is Pitta predominant period of life. Amlapitta is also Pitta dominant disease; hence it is very tough to treat it in this age period. Moreover, for this age group hurry, worry and curry has been advised to restrict. In this age group nobody is going to restrict themselves for any dietetic and behavioral code. Normally men have suffered more stress than female due to their profession and business. Many of them were stay outside and engaged with travelling and intake irregular and spicy food which leads to aggravation of the process of Amlapitta. In this era of modernization and civilization the society is conscious enough about what to eat but least about how to eat. Most of the etiological factors of Amlapitta are related with the diet pattern and behavioral pattern. If one does not follow the Ashtavidha Ahara Vidhi Visheshayatana then his Agni will be hampered and produce Aamannavisha and it leads to Amlapitta. Acharya Charaka has advised to take the food only after the previous meal is digested. If anyone takes the food with irregular intervals without proper digestion of the previous food (Adhyashana), it may cause aggravation of Doshas. In many metro cities everyone is in the stress due to competition and work load in the industries; they have the habit of eating now and then become a cause to vitiate digestive Agni and it ultimately produce the disease Amlapitta. In the present study majority (84 %) of the patients were Hindu followed by 16 % were Muslims. It can only be concluded that due to density of Hindu populations in and around Nadiad, Gujarat, India such incidence recorded in this study. It is said that both educated and uneducated people were suffered equally i.e. in rural area due to their illiteracy people are habitual to take unwholesome diet and also not aware about the proper method of taking food, while in urban area they were engaged in their work and due to shortage of time they are more prone to take the urban foods like pizza, puffs, cold drinks etc. to be one of the main causes of the disease. In the present study most of the patients were married. It may be inferred that responsibility, adjustments with adverse situations, economic condition and attention to family could be the probable cause for this observation. Katu, Amla and Lavana

rasa are Pitta provocation tastes¹³. Due to excessive intake of Katu, Amla and Lavana Rasas; by the Samanya Siddhanta, they tend to increase Amla and Dravaguna of Pitta and ultimately produce Mandagni. Majority of patients consumed Katu and Lavana for years. When the symptoms of Amlapitta developed fully fledged, they avoided the particular Rasa to prevent the experience of those symptoms. Thus Anvaya Vyatirekatah, it was proved that these Rasas were precipitating cause for Amlapitta. As per the socioeconomic status; 65 % lower middle class people were suffering from this disease. It may be due to stress induced by the struggle to improve their quality of life to become upper middle class. 80 % patients were vegetarians. Due to more Hindu locality in and around the Nadiad, Gujarat, India maximum vegetarians were noticed. On this observation, it cannot be concluded that vegetarians are more prone to Amlapitta. The flour of grains contains more carbohydrates. They are easily fermented, leads to Amla in Amashaya and Agnimandya. Pishtanna causes heaviness of the abdomen and Amlapitta manifestation. When the food is kept overnight, especially in hot days leads to fermentation of the food substance. Fungus can grow on them which are very dangerous and poisonous. Freezing the food stuff for many days also gives the same result like bakery products. Stomach secretes the digestive juices at the usual time at which it receives the food. If the food is not available, the secreted acids have its deleterious effects on the mucous membrane leading to auto digestion. Less intake of food causes Dhatukshaya and aggravates Vata which intern produces Vishamagni, Karshya etc. Finally Akaal bhojana may become a cause for the manifestation of Amlapitta. Abhishyandi bhojana increases the fluidity of Dosha, Dhātu, Mala and Srotas. Prithvi and APA Mahabhutas are attributed into Abhishyandi actions as these are Pichchhila (sticky) and Guru in nature. They obstruct the Rasavaha Srotas and cause Agnimandya etc. It shows the total trend of today's society may it be an educated population or common people that while taking the food with talking and laughing either watching television. In the present study only 10 % patients were aware about the concentration towards the food. Excessive consumption of tea, coffee, tobacco chewing and smoking cause for vitiation of Agni directly and it is incorporated in the Pitta, which is a predominant Dosha in the Samprapti of the disease Amlapitta. A constant exposure to these etiological actors augments the process of development of disease. Water should not be taken with meals as it dilutes the digestive juices and delays digestion. This explains the role of Antarodakapana in the Samprapti. As these patients could not have sound sleep at night, they slept in the day immediately after meals. These extra hours of sleep during the day hampered the digestion as well as sleep at night¹⁴. Some patients complained of acceleration in symptoms like burning sensation in the chest, pain in abdomen which caused sleep disturbances, these patients had to resort to immediate household remedy like drinking milk in order to obtain relief. Chirakaritva and Yapyatva of the Vyadhi are reflected in the present study because patients experienced comfort, when they forbid the etiological factors and symptoms aggravated on Apathya Sevana¹⁵. Maximum patients have Pitta dominant Prakriti and Amlapitta is also Pitta dominant disorder so, indicating the type of constitution was more prone to get this ailment. Majority of the patients were Madhyama and Avara Sattwa predominance in the present study, as Charaka has mentioned that a person having Madhyama and Avara Sattwa patients cannot handle excessive mental burden and they strongly react upon it; so, they are more vulnerable to diseases, which is supported in this study. Amlapitta is considered as a psycho-somatic disease. Chinta was the dominating Manasa Bhava in 57 % of patients in present study. The mental distortion is responsible for Ajirna¹⁶. Most of the patients reported that the somatic symptoms

aggravated during times of distress. Chronic stress is one of the proved causes for acid peptic disease¹⁷ also supports the findings.

CONCLUSION

Amlapitta is Pitta dominant disease; the figures of survey study suggest that persons having Pitta or Pitta-Vata prakriti were affected by this ailment. Among the Nidanas of Amlapitta, 40 % are related with the method of food intake i.e. Ahara Vidhi Vidhana. Manasika Hetus influence all the Sharira Hetus. In urban area, most of the people live in sedentary life. They are always in hurry and worry to get curry that has disturbed the food habits like eating before digestion of previously taken food, eating stale food, fast-food to save time, repeatedly sleeping after eating again and again, suppression of natural urges with mental stress and strain play an important role in give rise to Agnimandya, Vidagdhajirna and finally to Amlapitta. In rural area, due to ignorance of dietary method most of the people take Viruddhahara, Vishamashana, Adhyashana etc which ultimately become cause for the production of Amlapitta. In the present study most of the patients (92 %) were unaware about Viruddhahara e.g. milk with sour or salty things. Thus it is clear that diet and lifestyle play an important in causing Amlapitta. All these factors can be explored in larger sample for longer duration by future researchers interested in this subject.

REFERECES

1. Acharya Sushruta, Dalhana Sushruta Samhita, Sutrasthana, 46/501 edited by Vaidya Jadavji Trikamji Acharya, Chaukhambha Orientalia; 1997. p. 255.
2. Hyperacidity and Heartburn - Home Remedies, <http://www.home-remedies-for-you.com/remedy/Hyperacidity-and-Heartburn.html>
3. Sudhakar Reddy P, Ashok PK, Shenoy KT. A comparative study on effect of Ayurveda compound, Antacids and dietary therapy in the management of Amlapitta. *J Pharm Sci Innov* 2014; 3(1): 91-94. <http://dx.doi.org/10.7897/2277-4572.031114>
4. Scientific Basis for Ayurvedic Therapies by Paramesh R Rangeshand, Shankar K Mitra, CRC Press; 2003. p. 339-354.
5. A comparative clinical study of Shatapratrayadi Churna tablet and Patoladi yoga in the management of Amlapitta by Jitendra Kumar *et al.* *Ayu* 2011; 32(3): 361-364. <http://dx.doi.org/10.4103/0974-8520.93915>
6. Prevalence and Incidence of Gastritis, <http://www.rightdiagnosis.com/g/gastritis/prevalence.htm>
7. Digestive Diseases Statistics- gastrointestinal consultants, <http://www.gastrobay.com/digestive-diseases-statistics.html>
8. Vriddha Jivaka, Vatsya, Pandit Hemraja Sharma, Kashyapa Samhita, Khilasthana, 16/8-15, Chaukhambha Sanskrit Samsthana, Varanasi; 2006. p. 336.
9. A comparative clinical study of Shatapratrayadi Churna tablet and Patoladi yoga in the management of Amlapitta by Jitendra Kumar *et al.* *Ayu* 2011; 32(3): 361-364. <http://dx.doi.org/10.4103/0974-8520.93915>
10. Vriddha Jivaka, Vatsya, Pandit Hemraja Sharma, Kashyapa Samhita, Khilasthana, 16/8-15, Chaukhambha Sanskrit Samsthana, Varanasi; 2006. p. 185.
11. Vriddha Jivaka, Vatsya, Pandit Hemraja Sharma, Kashyapa Samhita, Khilasthana, 16/8-15, Chaukhambha Sanskrit Samsthana, Varanasi; 2006. p. 184.
12. Acharya Sushruta, Dalhana, Sushruta Samhita, Sutrasthana, 46/501 edited by Vaidya Jadavji Trikamji Acharya, Chaukhambha Orientalia; 1997. p. 86.

13. Acharya Charaka, Dridhabala, Charaka Samhita, Chikitsasthana, 4/6; edited by Vaidya Jadavaji Trikamaji Acharya, Chaukhambha Surbharati Prakashana, Varanasi; 2005. p. 428.
14. Acharya Charaka, Dridhabala, Charaka Samhita, Chikitsasthana, 4/6; edited by Vaidya Jadavaji Trikamaji Acharya, Chaukhambha Surbharati Prakashana, Varanasi; 2005. p. 118.
15. Acharya Charaka, Dridhabala, Charaka Samhita, Chikitsasthana, 4/6; edited by Vaidya Jadavaji Trikamaji Acharya, Chaukhambha Surbharati Prakashana, Varanasi; 2005. p. 67.
16. Acharya Sushruta, Dalhana, Sushruta Samhita, Sutrasthana, 46/501 edited by Vaidya Jadavaji Trikamaji Acharya, Chaukhambha Orientalia; 1997. p. 251.
17. Fink G. Stress controversies: post rheumatic stress disorder, hippocampal volume, gastroduodenal ulceration. *Journal of Neuroendocrinology* 2011; 23(2): 107-17. <http://dx.doi.org/10.1111/j.1365-2826.2010.02089.x>

Cite this article as:

Satani Kishor G, Gupta Shivanarayan N, Raghavani Hemang U. Evaluation of diet and lifestyle in etiopathogenesis of Amlapitta: A survey study. *J Biol Sci Opin* 2015;3(2):81-86 <http://dx.doi.org/10.7897/2321-6328.03217>

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