Review Article

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A REVIEW ON AMA AND AGNI: APPLICABILITY IN CLINICAL PRACTICE

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ABSTRACT

Ayurveda has fundamental concepts like Dosha, Dushya, Mala, and Agni. Ama is a key concept in Ayurveda that plays a significant role in the development of various diseases. Ama is unripe, undigested food, which is caused by Agnimandhya. Ama can produce at various levels, like at the level of Jatharagni, Bhutagni, and Dhatwagni. Ama production can result in a variety of diseases at respective levels, like Grahani and Amavata. Thus, Ama denotes the transition from physiological to pathological conditions, as it is the precursor of many inflammatory, infective, and degenerative changes that ultimately cause the full-fledged diseases. Keeping this approach, the review is carried out to understand Ama from Ayurvedic and modern perspectives. In this review article it can be concluded that Ama has no direct correlation in modern science but can best be equated to toxins, metabolic by-products, and hormonal dysfunctions. Different treatment principles are advised for Amavastha; the main line of treatment is Apatarpana, which includes Langhana, Langhana Pachana, and Doshavasechana.

Keywords: Ama, Agni, Jatharagni, Bhutagni, Dhatwagni, Metabolic by-products, Hormonal dysfunctions, Apatrapana.

INTRODUCTION

The concept of Ama is as old as the concept of Agni, which is basic in Ayurvedic principles. It is deep-rooted in all the segments of Ayurveda, and in fact, Ama is considered as one of the vital vyadhi ghataka (factors of pathogenesis) responsible for the initiation of disease processes in the body, hence called "Amaya in Ayurveda, which is a well-known synonym for vyadhi. Where the concept of Agni is a physiological approach, the concept of Ama is a pathological one. The word Ama is derived from "Amyate ischat paschyate." When Agni is not functioning normally, the formation of Adhya Rasadhatu gets hampered, and this improperly metabolized substance is called Ama, which manifests in Amashaya. [1] It can be understood as Apakwa Ahara Rasa in Amashaya, Rasashesha in Amashaya, Apakwa Mala in Annavaha Srotas, and Adhyadhatu resulting out of Apakwa Ahara Rasa. [2]

Ama Nidana (Etiological Factors)

Table 1: Ama Utpadaka Hetu [3,4]

Aharaja hetu	Viharaja hetu	Manasika hetu	Others
Abhojana	Viruddha chesta	Kama	Improper management of panchakarma
Atibhojana	Nischalata	Krodha	Desha Kala Ritu Vaishamyat
Adhyashana	Vega vidharana	Loba	
Vishamashana		Moha	
Viruddhashana		Irshya	
		Bhaya	
		Shoka	

Ama Swaroopa (Characteristics of Ama)

Anna rasa which is incompletely digested, has foul odor, sticky in nature, produces lethargy in body is Ama. Though Ama may originate at various levels it possesses Pratyatmaka Gunas.

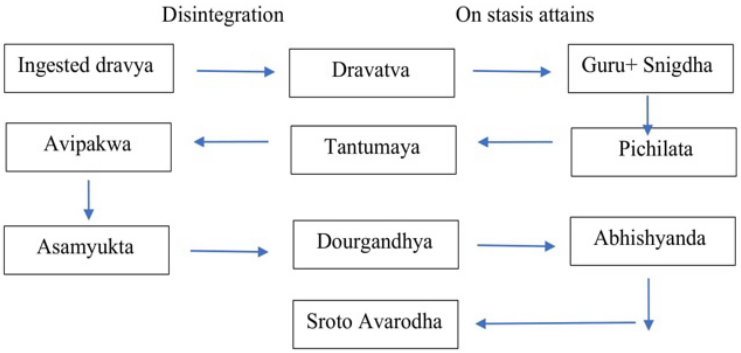

Figure 1: Process of Ama attaining Uttorottara Gunas [5]

Ama gunas and its effects on the tissues

The Dravadi Dasha Gunas of Ama can individually or collectively aggravate the doshas, leading to the development of various diseases. The formation of Ama is influenced by the Gunas involved during its production (Nidana). According to the concept of Swayo Nivardhaka (like increases like), the predominant Gunas in Ama interact with similar qualities in the Doshas, Dhatus, and Malas, as well as surrounding tissues. This results in varied manifestations of Samarogas.

Applicability of guna siddhanta in ama [6]

Drava Guna draws fluids from surrounding tissues and creates a hydrophilic effect within cells there by increasing Drava Dhatus such as Kapha, Pitta, and Rasa, leading to imbalances in osmolality, pH, viscosity, and fluid concentration at local or systemic levels. These disruptions in homeostasis can result in pathological conditions. Guru Guna impairs the movement of intracellular and extracellular particles and hinders cellular permeability. Primarily affects Guru Dravyas like Kapha, Mamsa, Meda, Asthi, Majja, Shukra Dhatus, and Malas resulting in stagnation and heaviness. Pichchila, Tantu, Abhishyandi Gunas increase fluid viscosity, disrupt secretions, and arrest the movement of mucosal cilia or intestinal villi. Interfere with Pittadhara Kala (membranous digestion) in the gastrointestinal tract, leading to poor digestion and obstruction (Srotoavarodha). Hinder the movement of food, Doshas, Dhatus, and Malas, causing Kosta Stabdata and tissue rigidity. Avipakwam caused by Mandagni resulting in the inability to fully transform substances.

Asamyuktam the incompletely digested material cannot integrate with surrounding tissues, making it an alien or incompatible substance that triggers Vatadi Doshas.

FORMATION OF AMA AT DIFFERENT LEVELS

Ama formation takes place broadly at three levels due to their hypo-functioning state Jatharagni, Bhutagni and Dhatavagni.

At Jatharagni Level (Digestive Level)

Undigested food remains in the stomach for an extended amount of time. Irritate the Samana Vata and Pachaka Pitta, which leads to Sama Avastha. Physiologically after the Sara Bhaga is absorbed, the Mala Bhaga remains. However, in case of Mandagni, much of the nutrient portion turns into waste. This condition is called Sthoola Ama Rasa,[7] as it cannot pass through the intestinal villi due to its larger molecular structure. When Ama Rasa enters the circulation; it is known as Sookshma Ama Rasa.[7] These states of Ama result from Jatharagni Mandyata.

At Bhutagni Level (Elemental Metabolism Level)

The role of Bhutagni is conversion of the consumed Panchabhautika Ahara to body tissue. The Sookshma Amarasa enters the system and weakens Bhutagni. The Guravadi Gunas of Amarasa diminish the function of Bhutagni and increase the production of Ama at the Bhutagni level.

At Dhatwagni Level (Tissue Metabolism Level)

When circulating Ahara Rasa is in the form of Ama (Sookshma Ama Rasa) the tissues in the body are not able to utilize. Since it is heavy to respective Dhatwagni leading to Dhatwagni Mandhyata further to Ama state in that Dhatu. Since Dhatwagni is prevailing synthesis of new tissue is not possible. As each Dhatu has got its own structure and specificity because of its own Agni, hence due to hypo-functioning of them there is a possibility of Ama formation at each Dhatu level.

DIFFERENCE BETWEEN AMA AND ABHISHYANDA

"Pichilyagouravadravyam ruddha rasavaha siraha
Dhatte yadgoravam tasyaabhishyandi yatha dadhi"

Abhishyanda occurs due to Pichila and Guru Gunas of Dravya which lead to Srotoavarodha[8] and as per Acharya Sushruta "Abhishyandi dosha dhatu mala srotasam ati kleda prapti jananam" i.e., substances or factors that cause excessive kleda (moisture) accumulation and blockage of Srotas. On the other hand, Ama is formed due to Mandagni, causing improper digestion of food.

Examples of diseases

Amavata: Abnormal functioning of Agni results in improper digestion and the formation of immature Rasa in the Amashaya, which undergoes fermentation. The resulting Ama is absorbed into the system and carried by the aggravated and vitiated Vayu to the Kapha sites, particularly the stomach, joints, chest, and throat. This circulating Ama, along with aggravated Vata, enters the gastrointestinal tract and joints, leading to symptoms such as loss of taste, thirst, lack of enthusiasm, fever, stiffness, and heaviness in the body. When Ama accumulates in the joints, it causes restriction of movement, pain, tenderness, and swelling, resulting in a condition known as Amavata.[2]

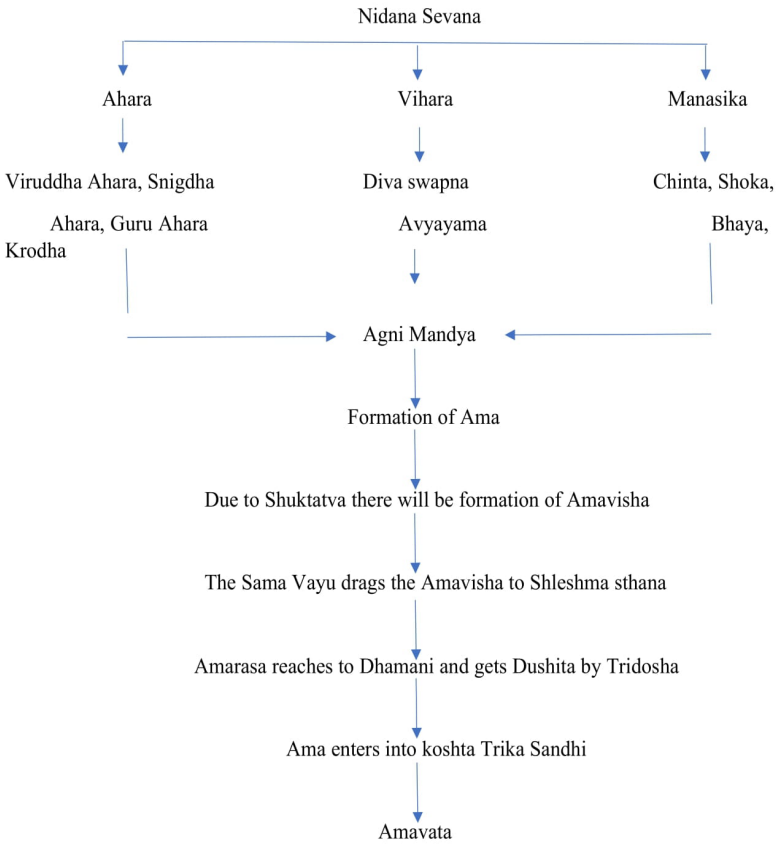

Figure 2: Amavata Samprapti

Grahani: Grahani is a disease of the gastrointestinal tract that has become increasingly common nowadays due to unhealthy lifestyles. Contributing factors include the excessive consumption of fast food, eating during indigestion, overeating, irregular eating habits, and consuming heavy, cold, rough, or contaminated food. Additionally, Diwaswapana, Vega Vidharana are responsible for the imbalance of Doshas and Disturbances in Agni. The disruption of Agni leads to the production of disease.[9]

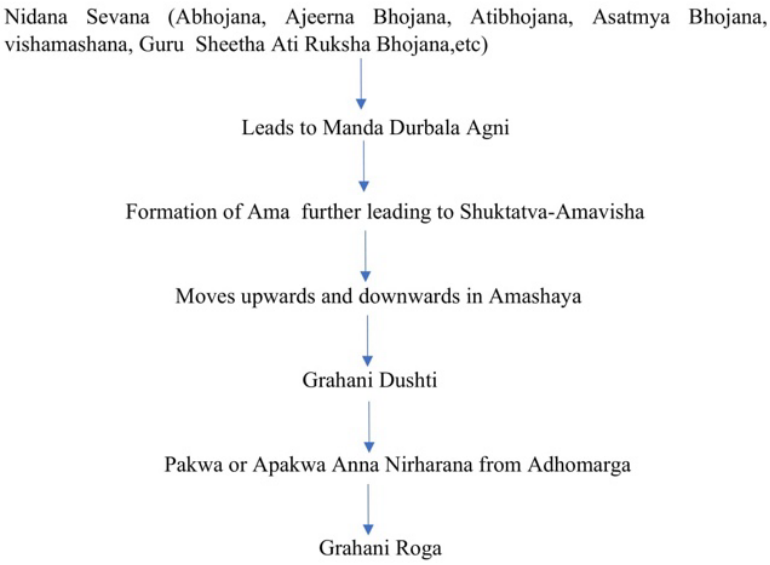

Figure 3: Grahani Samprapti

DISCUSSION

Agni and Metabolism

The concept of Agni is fundamental in Ayurveda and plays a crucial role in maintaining health. While metabolism refers to the biochemical process that converts food into energy. Agni governs digestion, absorption, assimilation, and transformation at both gross and cellular levels. It is responsible for maintaining Ayu, Varna, Bala, Swasthya, Utsaha, Deha pusthi, Prabha, Ojas, Tejas, Prana and Dehagni.

Understanding Agni, Ama and Metabolism

The concept of Ama is the most important fundamental principle of Ayurveda in understanding the pathophysiology of diseases. Ama formation takes place broadly at three levels namely, Jatharagni, Bhutagni, and Dhatwagni due to their hypo-functioning state. Intermediary metabolism involves the transformation of substances after absorption from the gastrointestinal tract, where they are used for tissue synthesis, broken down, or eliminated. This process is influenced by Bhutagni or Dhatwagni. For an injected substance (Vijateeya) to be accepted by the body, it must match the molecular size and form of existing tissue molecules (Sajateeya) and be at the post-Bhutagni Paaka level. The changes that substance undergoes after absorption from GIT is under influence of Bhutagni so any substance which has remained stable without any Paaka or remained as residual or byproduct of metabolism such as pyruvic acid, ketones etc., can be called as ama at Bhutagni level. For example, In Carbohydrates metabolism the end product is Pyruvic Acid (Pyruvate), which in presence of oxygen converts into acetyl-CoA that enters into Krebs cycle, in absence of oxygen this pyruvic acid is converted into lactic acid (Lactate) which is later used in gluconeogenesis when the Bhutagni is impaired the by-products fail to undergo further metabolism (Paaka) which can be considered as Ama at the level of Bhutagni. At the Dhatwagni level, poorly metabolized nutrients i.e. Ama cannot be used by tissues, leading to further dysfunction and toxic buildup, similar to Amavisha. This impairs tissue synthesis and increases waste production, causing various diseases. For example, during protein metabolism, whether in the synthesis of essential nitrogenous compounds like albumin, globulin, fibrinogen, and prothrombin (anabolic processes) or during the initiation process (catabolic), ketoacids are formed. [10] This leads to an increase in by-products within the tissues, resulting in Dhatwagni Mandya (reduced tissue enzymatic activity). Consequently, there is an accumulation of intermediate products, known as Ishat Pakwa Ama, in circulation, which can give rise to various Sama disorders. In autoimmune disorders, tissues can become alien (Ama) to each other, triggering immune responses, such as in rheumatic conditions.

Understanding Ama at the Level of Hormones and Enzymes

Enzymes are biological catalysts that facilitate digestion and metabolism, chemical reactions. Digestive enzymes (Jatharagni) like lipase, amylase, and protease help in breaking down food; a deficiency of these can cause incomplete digestion. Metabolic enzymes (Dhatwagni) regulate cellular metabolism, e.g., ATP production. Imbalance of these can cause Ama. Dysfunction of hormones like thyroxine and ACTH can lead to conditions like myxedema, where ama accumulates in target tissues. Hormonal and enzymatic deficiencies resulting from Dhatwagni dysfunction are considered Amajanita Rogas (diseases caused by Ama).

CHIKITSA OF AMA WITH CLINICAL APPLICABILITY

Apatarpana is the best line of treatment in Amavastha. According to Acharya Vagbhata, diseases produced by Ama get relieved by Apatarpana.

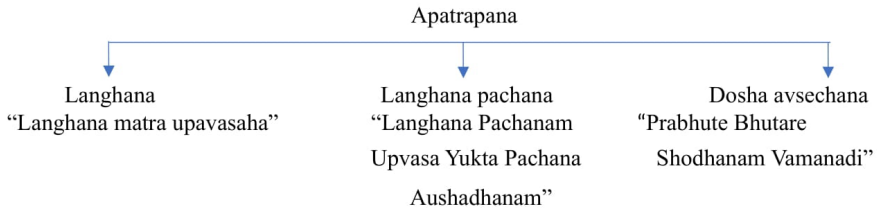

Figure 4: Types of Apatrapana [14]

Langhana (Fasting)

Langhana allows Agni to perform Pachana Karma by not burdening it with additional food intake, thereby enabling the natural resolution of Ama. During the period of Langhana, even though enzymatic secretions may be weak, the production of Ama is halted by abstaining from food. As a result, existing secretions themselves act as digestives (Pachanakari), helping to resolve the accumulated Ama. Langhana substances possess qualities such as laghu, ushna, teekshna, vishada, ruksha, sukshma, khara, sara, and kathina. [12] These attributes are the opposite of those associated with Ama, making them effective in the treatment of Ama.

Langhana Pachana

The term "Pachana" refers to the process of digesting Ama in the body. [13] The effectiveness of Pachana substances depends on their ability to digest Ama. These substances are rich in the qualities of Agni and Vayu, which are crucial for the digestion of Ama. Pachana substances work in both cases of Sthoola Ama Rasa and Sookshma Ama Rasa and are effective across all conditions of Sama in various disease Roga Margas. Since these substances possess Teekshna and Ushna qualities, they counteract the qualities of Ama, thereby clearing the Sroto Vibhandha Karitwa.

Shodhana

In all acute and recurrent conditions of Saama Rogas, Shodhana Karma is considered the best treatment. [14] However, its role is limited in acute Saama conditions affecting the Shaka and Madhyama Marga, such as in cases where Ama is in a state of Sookshma Amarasa. Shodhana Karma also has limitations when Ama has spread throughout the body or is deeply situated in tissues like the Snayu and Kandara, as well as in acute conditions like Dandalasaka.

CONCLUSION

The Ayurvedic concept of Ama is interconnected with Agni (digestive fire), which governs digestion, metabolism, and health. When Agni functions optimally, food is properly digested, nutrients are assimilated, and waste is efficiently eliminated. However, Agnimandhya (weakened Agni) leads to the formation of Ama—a toxic, undigested metabolic residue that disrupts

physiological balance and triggers disease processes. Ama forms at various metabolic levels—Jatharagni, Bhutagni, and Dhatwagni—and disrupts homeostasis, leading to systemic dysfunctions. Its gunas (qualities), such as heaviness (guru), stickiness (pichchila), and undigestedness (avipakwa), interact with the doshas, aggravating pathological conditions. Diseases like Ajeerana, grahani, annavaha shrotodusthi, rasaravaha sroto dushti like Amavata and shukra dushti, and vatavyadhi also illustrate how Ama accumulates and manifests through specific mechanisms. The management of Ama involves treatments aimed at digesting or eliminating it, primarily through Apatarpana chikitsa, which includes Langhana (fasting), Pachana (digestion of Ama), and Shodhana (purification). These interventions, rich in qualities opposite to Ama, address both acute and chronic conditions by restoring Agni (digestive fire), clearing metabolic blockages, and promoting tissue balance. From a modern perspective, ama can be correlated with the concept of toxins or metabolic byproducts resulting from incomplete digestion or metabolism. Understanding Ama bridges traditional Ayurvedic concepts with modern insights into disease mechanisms, emphasizing the importance of digestion, metabolism, and elimination in maintaining health and preventing disease.

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