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## A Review on Medical Emergencies of *Mahastrotasa* (Digestive System) Regarding Food - Ayurveda Concept and Recent Advances

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### ABSTRACT

Medical emergency is an acute illness that retains an instantaneous risk to a person's life or long term health. The major gross channel- *Mahastrotasa*, transports metabolically produced substances, to all parts of the body, and nurtures the *sthira dhatus*, and can be compared with digestive system. Food is needed to fuel our bodies for growth, energy and repair, if taken in proper quantity and by proper way it acts as *Rasayana* in the body, if taken disobediently, it acts as a poison and may lead to medical emergencies like Choking, Cafe Coronary, and sometimes death may occur. Food poisoning is vital medical emergency. Some signs like vomiting, diarrhea, sweating, severe abdominal cramps are more serious symptoms and could mean there's an emergency medical problem. Due to the modern way of life, different types of food combinations and taste makers used in cooking and not taking proper care while preparing food due to commercial view lead in sever medical emergencies. According to Ayurveda Classics the causative factors are Non-bacterial i.e. *Viruddha Aahara*, *Aamvish*, *Dushivish*, *Garvisha* and Bacterial i.e. two types of *Krimi* (organism) - *Drisy*a (visible) and *Adrisya* (invisible). According to modern science and recent advances, food poisoning consist of all illness which results from ingestion of food. Food-borne illnesses are usually contagious and lethal in nature, caused by Viruses, Bacteria, Parasites, Fungi, and chemical substances causes severe medical emergencies like meningitis. Chemical contamination can cause acute poisoning and lifelong diseases, like cancer. Pesticide residue in food, Botulism, and food adulteration are another significant food, related medical emergencies. Food can play a major role in coronavirus ongoing global pandemic.

### KEYWORDS

*Mahastrotasa*, Medical emergencies related food, Preventive measure



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## INTRODUCTION

The concern of food related medical emergencies have been receiving greater interest and more emergency instances are reporting to the hospital every year.

According to WHO statistics food that contains harmful viruses, bacteria, parasites, or chemical substances are unsafe for health and cause more than 200 diseases ranging from diarrhea to cancer. Approximately 1 out of 10 people in the world suffer from contaminated food. Every year nearly 420,000 people die because of food related illnesses. Considering food as *prana* **Acharya Charak** in Charak samhita stated *Ashtavidh-aahar-vidhivisheshyatan* (Dietary Guidelines) for better health and prevention from many diseases merely arising due to wrong dietary habits. Two main factors responsible for food illnesses are- Self-discipline and lack of awareness.

## AIMS AND OBJECTIVES

1) To study the Medical Emergencies of *Mahastrotasa* (Digestive System) Regarding food Ayurveda Concept and Recent Advances

2) To make people aware about Self-discipline regarding good food habits for avoiding chances of food illnesses.

## MATERIALS AND METHODS

- Through this paper efforts have been taken to illustrate maximum medical emergencies related to food and to aware the individual from the causes and types of food poisoning mentioned in Ayurveda classical text and its recent advances.
- Various Ayurveda Samhitas and text books of modern sciences, peer review journals have been referred and surf various websites.

### Food Related Medical Emergencies of – *Mahastrotasa* :

The most necessary requirement for nourishment of human life is food. Food is required for energy, growth and repair of the body and for maintaining the immune system healthy. According to **Charaka**, “Both the body and the diseases are the products of food. The wholesomeness and unwholesomeness of food is the special cause of health and illnesses respectively.”

प्राणाः प्राणभूतामन्नं तदयुक्त्या निहन्त्यसून ।  
विषं प्राणहरं तच्च युक्तियुक्तं रसायनम् ॥

**Charaka**

**Anna(food)- Prana** for all living organisms, if taken properly, performs as *Rasayana* in body, on the contrarily, it becomes fatal when not consumed in



appropriate way and may lead to medical emergencies and death may occur sometimes<sup>1,2</sup>.

Medical emergency is a severe illness that holds an immediate risk to a person's life<sup>3</sup>. The *Strotasa* is functional and structural unit of body, acts as a channel, constituting the internal transport system of the body. They carry metabolically produced elements, to all parts of the body, and nutritify the *sthira dhatus*<sup>4</sup>. Entire *Annavaahastrotas* is the major channel called as *Mahastrotas*, which compares with digestive system, originate in the stomach and carry food through the digestive system<sup>5</sup>.

#### **Medical Emergencies Regarding Food swallowing – Choking and Cafe Coronary:**

- When a piece of food (especially meat) gets stuck in the upper airway, causes **Choking**- blockage of the upper airway, inhibits a person from breathing well and stops the oxygen from entering the lungs and due to lack of oxygen person may die within 4 to 6 minutes<sup>6</sup>.
- When a healthy but grossly intoxicated person (under the influence of alcohol), begins a meal (inhale food bolus, or piece of bone or meat), suddenly coughs violently, turns blue, collapses and dies, without much hassle, such condition is called as **Cafe Coronary**. Depression of

gag reflex is caused by intoxication. The foreign body in trachea or larynx leads to parasympathetic stimulation from laryngeal nerve which results in cardiac arrest and death. “Death appears to be caused due to sudden heart attack and hence the name cafe coronary”<sup>7</sup>.

#### **Medical Emergencies Regarding Food Poisoning**

All illness which result from ingestion of food are termed as food poisoning. Foodborne diseases are typically **infectious or toxic** in nature. Bacteria, Viruses, Parasites, Fungi or chemical substances entering the body through contaminated food or water are responsible for this. According to WHO 2015 report foodborne diseases are caused by 31 foodborne agents i.e. bacteria, viruses, parasites, toxins and chemicals in food.

#### **According to Ayurveda classical text -**

Food Poisoning are classified in two types Non-Bacterial and Bacterial.

**Non-Bacterial Food Poisoning** - Caused by *Viruddha Aahara* , *Aamvish*, *Dushivish*, *Garvisha* which can be interrelated with **Food Allergy, Endogenous Toxin, Cumulative Poison, Compounded Poison**, correspondingly, leads to severe medical emergencies like: Loss of Appetite, Skin Diseases, Eruptions, *Alaska* (Intestinal Obstruction),



*Danalasaka* ,*Vishoochika* (Cholera),  
*Vilambika* (Paralytic Ileus).

**Bacterial food Poisoning-** Caused by two types of *krimi* (organism) - *Drisyā* (visible) and *Adrisya* (invisible) and minute form of *krimi* called *kshullaka*. It has such a potential that if an individual consumes such food material it can harm the body. According to the *Sushruta*, one of the cause of Atisar is *Krimidosh*, which means micro-organism affect the human being and cause many infectious diseases<sup>8-11</sup>.

### Recent Advances

Most commonly, food poisoning is a reaction to food or water contaminated during improper cooking, handling or storage. **Eating commercially prepared or institutional foods is the cause of about 80% of food poisoning and may be the cause of current situation of coronavirus pandemic.**

The most common contaminants are:

**Bacteria:** Salmonella,

Campylobacter and E. coli. **Viruses:**

Rotavirus, Adenovirus, Parvovirus

Protozoa: Giardia lamblia, Fungi:

Aspergillus flavus, Fusarium roseum,

**Toxins/ Chemicals:** Environmental pollutants and toxins occurring naturally.

•**Toxins occurring naturally:** It includes cyanogenic glycosides, marine biotoxins, mycotoxins, and toxins in poisonous mushrooms. High levels mycotoxins for

example ochratoxin and aflatoxin, produced by mould on grain can be found on staple foods like cereals or corn. Long-lasting contact can affect the normal development and immune system, **or can lead to malignancy.**

• **Persistent organic pollutants (POPs):** Are accumulated compounds in the environment and human body; examples are dioxins and polychlorinated biphenyls (PCBs), which are undesirable by-products of industrial processes and waste burning. POPs and PCBs is issue of great concern worldwide since it accumulate in animal food chain. Reproductive and developmental problems, damage to immune system, are caused by Dioxins, which are highly toxic in nature. It interferes with body hormones and can even cause **cancer.**

• **Heavy metals:** such as lead, cadmium and mercury cause neurological and kidney damage. Pollution of soil, water and air results in contamination in food by heavy metal.

➤ Recent data interprets that Food Poisoning can lead in severe Medical Emergencies having symptoms like **Nausea and vomiting, Abdominal pain/cramping, Diarrhea, General weakness, Fever, Meningitis, and can lead to disease like cancer**<sup>12</sup>.

**Botulism**



The source of foodborne botulism - Botulinum toxins are one of the most toxic substances have been found in a variety of foods, including vegetables, such as green beans, mushrooms, beets and spinach, low-acid preserved fruits, fish, in addition to home-canned foods, salted, fermented, and smoked fish; and meat products, such as ham and sausage. **Botulinum toxins can block nerve functions even lead to muscular and respiratory paralysis**<sup>13</sup>.

#### **Pesticide residues in food:**

Pesticides are used in farming to protect crops against, fungi, insects, weeds and pests. It is also used to guard public health by controlling the vectors of tropical diseases, such as mosquitoes. But pesticides also have potential to harm humans. They may produce adverse health effects including **effects on reproduction, immune or nervous systems, or develop cancer**. In order to avoid the adverse effects of pesticides they should be tested for all possible health effects<sup>14</sup>.

#### **Food Adulteration**

- Food Adulteration is the process in which the excellence or the nature of the food is reduced by removal of vital substances or adding adulterants.
- Basically, small quantity of non-nutritious substances are added intentionally to

recover the appearance, texture or storage properties of the food.

- In the developing countries food adulteration is quite common.

#### **Medical Emergencies Regarding Food Adulteration**

- Adding mineral oil to edible oil causes cancers.
- Adding Cobalt to liquors and water may lead to cardiac impairment; tin, copper and zinc can cause, vomiting, diarrhea and colic.
- Grains treated by mercury fungicide, or fish contaminated by mercury causes diseases of brain, paralysis, and even death.
- Mercury fungicide treated grains, or mercury-contaminated fish causes brain damage, paralysis, and even demise.
- Adding lead chromate with spices and turmeric powder can be the reason of paralysis, anemia, brain damage and abortions.
- Contamination of water, natural and processed food by lead may be the reason of foot drop, constipation, anemia, insomnia, mental retardation and lead poisoning,
- Food colour like metal yellow, in coloured food may be the reason of allergies, liver damage, anemia, infertility, cancer and birth defects<sup>15,16</sup>.

#### **The high risk factors-**

- Having a weak immune system.



- Having a serious medical disorder, such as diabetes, kidney disease, HIV, AIDS or cancer,
- Travel outside to areas where you are exposed to germs, viruses causing food poisoning.

**Older people and Infants are at the highest risk for food poisoning.**

Extra care should be taken of pregnant and breastfeeding women to evade food poisoning.

## DISCUSSION

In spite of advancement in medical facilities, and wider medical knowledge the death is inevitable. Still by recognizing the medical emergencies on proper time and handling it in proper way we can extend the life span of an individual. Deaths from choking and acute coronary syndrome can be avoided by being aware of the modifications in eating habits i.e. eating food in smaller pieces, avoiding swallowing quickly, prior munching and grinding of the food and by avoiding talking and laughing and consuming alcohol during meals.

Food poisoning is a significant medical emergency, although common, sometimes it becomes quite dangerous. Often it can be prevented easily- by preparing and handling food properly.

## CONCLUSION

**By following the given steps food related illnesses can be prevented:**

- Buy foods after examining it carefully before their expiration date.
- Make sure that cans of food are not bulging or dented, and the jars of food should be sealed tightly.
- Be particularly alert while buying shellfish, dairy products as well as eggs.
- Buy foods from reliable sources only. Avoid products from street vendors and roadside markets.
- Do not eat mushrooms, unless sold by a reliable source.
- Store foods properly. Prepare foods safely. Keep utensils and cooking surfaces clean.
- Wash your hands before and after preparing and eating food, rinse vegetables and fruits thoroughly.
- Use smooth, hard and nonporous cutting board and clean it well with soap and hot water before and after each use.
- Make sure that the food is cooked thoroughly and be particularly cautious while cooking seafood and poultry.
- Avoid eating stale food.
- Order cautiously. When eating at a restaurant.



- Another effective means to prevent food poisoning is Food irradiation.

In addition to this for ongoing global coronavirus pandemic include the following in your food as a preventive measure - Fresh vegetables, fruits, Nuts like Almonds, walnuts and seeds like flax, pumpkin and some ayurvedic drugs like bell peppers, clove, cinnamon, ginger, turmeric.

Viewing the above points, it can be concluded that *Ahara* should be taken according to *ahara vidhi visheshaytan* (Dietary Guidelines) mentioned by our *Aacharya*, especially in Charak Samhita.



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