FOOD POISONING

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ABSTRACT
Food poisoning is a common problem nowadays. This problem is receiving more attention and more cases are reported in the hospital at present. Due to the modern way of life different combinations and taste makers are used in cooking leads to food poisoning frequently. Health depends on the food and the style in which it is taken. If the food is consumed according to dietetic regulations, it protects health; otherwise it is manifested in diseases like food poisoning. The use of chemicals in the form of pesticides and fertilizer has become an integral part of modern agriculture. These chemical pesticides get into the human body by different ways and affect the human being by causing food poisoning. Living environment and life style of people have changed a lot. Therefore the diseases that caused due to poisoned environment have appeared in different forms and styles. And food poisoning is one of its creations. In general the purity of external environment affect the purity of food we eat, water we drink and air we breathe.

KEYWORD: Food poisoning.

INTRODUCTION
An ideal food not only nourishes the body, but also nourishes the mind. Hence the type of food consumed influences the quality of mind too. Food (AharA), Sleep (Nidra) and Celibacy (Brahmacharya) are the three pillars of life (Trayopastambhas) play an important role in the maintenance of health of an individual. [2] Out of the three; food plays the grass root role in healthy, diseased and convalescent states. It is more important than the medicine itself. Food is primarily responsible for the growth, development and protection of the body, from decay and diseases.
Life thrives on two of environments, the external environment from which the organism gets its food and air to survive and the internal environment which regulates the various metabolic processes at cellular and subcellular level for life to be sustained. In general we can say the purity of external environment affects the purity of food we eat, water we drink and air we breathe.

What to eat is the most important question with respect to food. Again this is a question that demands strict control of mind from the consumer. The colorful advertisements flashing around today tempt people with their catchy slogans and striking visuals into their net. This is tempting people to leave their old and harmless systems of diet and to try out the new dishes on their table. These new recipes may definitely satisfy the taste buds but will be harmful to the body in the long run. Therefore, it would be worthwhile to study the various principles regarding the type of food to be taken for the proper growth and maintenance of the body. Right diet and regimen are essential components of right lifestyle. Diet is the science of food and its relationship to health. Dietetics is the practical application of the principle of nutrition. It includes the planning of food for both the normal and sick persons.

The term “Food poisoning” may be used in general or special sense. When the term is used in general or wider sense, it includes all illness resulting from ingestion of foods containing nonbacterial or bacterial products. When the term is used in its special or restricted sense, it means that the poisoning is due to bacterial products only. The bacterial products include bacteria and their toxins. The nonbacterial products include poison derived from plants, animals and inorganic chemicals. Foods containing such products are known as poisonous food. Food poisoning is common in summer because the warm temperature favors the multiplication of micro-organism.

**DEFINITION**

Food poisoning means illness resulting from ingestion of food with microbial or non-microbial contamination. In other words, it is a gastroenteritis caused by ingestion of food or drink contaminated with either living bacteria or their toxins or chemical substances and poison derived from plants and animals.

Food poisoning infection ranges from trivial intestinal disorders to life endangering bacterial invasions of the blood stream.
Characteristics’ of food poisoning

- Simultaneous attack of many persons at the same time.
- History of ingestion of common food by all suffers.
- Similarity of signs & symptoms in majority of cases.

Causes of food poisoning

1. Microbial contamination
   a) Bacteria
      - Bacillus cereus
      - Staphylococcus aureus
      - Salmonella group
      - Shigella
      - Vibrio
      - Escherichia coli
      - Campylobacter
      - Clostridium
      - Listeria monocytogenes
      - Yersinia enterocolitica
   b) Viruses
      - Rotavirus
      - Adenovirus
      - Parvovirus
   c) Protozoa
      - Giardia lamblia
   d) Fungi
      - Aspergillus flavus
      - Fusarium roseum

2. Non-microbial contamination
   a) Vegetable origin
      - Lathyrus sativus
      - Mushrooms
      - Aggemone Mexicana
b) Animal sources
   - Poisonous fish like shellfish, scombroid fish etc.
   - Mussel

c) Chemicals
   - Flavoring agents
   - Coloring agents
   - Preservatives

**Bacterial food poisoning**
This is the most common type of poisoning occur in day today life. It results from the ingestion of contaminated food, uncooked food or imperfectly cooked food. It is of three types:
   - Infectious/Infection type
   - Toxic type
   - Botulism type

**Infection Type**
This type of food poisoning results from ingestion of viable micro-organism that multiplies in the GIT producing a true infection. For example: *Salmonella* and *Shigella* group of organism etc. The natural reservoir of *Salmonella* organism is in certain birds, mammals and reptiles. Food may be contaminated with infected excreta of mice or rats or infection may transfer by flies or by human carriers employed in the handling of food. *Shigella* infection is the result of
contamination of food or water supplies with the faces of the individual who either have the disease or often are asymptomatic carriers of the organism.

**Incidence**

Infection type foods include twice cooked meat dishes, fish dishes, soups, custards, milk cream, ice cream, tinned food. The *Salmonella* food poisoning occurs whenever large amount of foods are prepared and unconsumed food is kept for future meals. So this type of poisoning is more frequently reported from canteens, restaurants, hospitals etc than from private houses.

**Signs and Symptoms**

Onset is sudden. Chilling in the initial stage followed by headache, nausea, vomiting, severe abdominal cramps, marked prostration, foul smelling watery diarrhea stained with blood and mucus occurs in 12 hrs to two days.

**Diagnosis**

Diagnosis is made by isolating the bacteria from the vomit, urine, faeces and the suspected foods or from the bowels and solid organs of the sufferer after death. Identifying them by cultural characteristics and agglutination tests.

**Postmortem Appearances**

The mucosa of alimentary tract is inflamed or even ulcerated, internal organs are congested. Features of gastroenteritis and general toxemia are found.

**General Treatment**

- Stomach wash and mostly symptomatic
- Glucose saline infusion should be given to promote elimination of toxin from the system

**Prophylaxis**

- Regular inspection of meat at the slaughter house
- Rodent control measures at places of food industry
- Proper cooking of preserved food and dried egg powder
- No carriers should be employed in dairies and food industry
**Toxic Type**
This type of food poisoning results from poisonous substance produce by an organism that has gained access to the prepared food. For example: Most cases are due to heat stable enterotoxin produce by the *staphylococcus*. Other toxin producing organism which may give rise to such food poisoning are *Proteus vulgaris, Streptococcus viridians, B.coli, Clostridium welchi* etc.

**Incidence**
The materials usually affected are meat, milk, fish or egg etc.
Conditions favoring this of poisoning are:
- The food must be contaminated by a strain organism that produces enterotoxin
- It must be suitable for growth of this organism
- The infected food must be kept at a temperature suitable for bacterial growth.

**Signs and Symptoms**
Salivation, diarrhea, nausea, abdominal cramps and vomiting occur for a short period. The patient recovers as soon as the enterotoxins have been neutralized and metabolized. Here symptoms appear rapidly and are gastrointestinal. They are of short duration and recovery usually prompt & complete.

**General Treatment**
- Stomach wash and purgatives are given
- Glucose saline infusion should be given to promote elimination of toxin from the system
- Antibiotics are given depending upon causative organism.

**Postmortem Appearances:**
- The mucosa of GIT is swollen and congested.
- Microscopic examination shows fatty generation of lever.
- The causative organism can be isolated from the blood and viscera.

**Botulism Type: (Botulism / Allantiasis)**
The term botulism is derived the word “*botulismus*” meaning sausage, since out break of this disease were first found following ingestion of improperly cooked sausage. This food poisoning results from the ingestion of preformed Botulinum exotoxin in the preserved food
and the toxin is produce by *Clostridium botulinum*, a gram positive aerobic spore forming bacillus.

This bacillus are mostly present in under processed sausage, potted meats, tinned fish, canned vegetables and fruits. It is commonly found in soil and therefore likely to present in such soil contaminated undercooked or canned food.

**Action**

After ingestion the spores of *Clostridium botulinum* germinate into vegetative forms in the intestinal tract and then synthesize neurotoxins which bind to irreversible terminal axons and inhibit the release of acetylcholine presynaptically and paralyze the nerve ending by blocking the nerve impulses at the myoneural junction.

**Signs and Symptoms**

Symptoms commences within 24 hours. Dryness of mouth, difficulty in swallowing and speech.

Nervous disorder like diplopia, dysphonia, dilation of pupils. Ptosis, sense of suffocation & dysphasia. Beside this there is constipation, hypothermia, respiratory insufficiency and urinary retention. Muscular weakness and nervous prostration. Pulse become weak and face become cyanosed. Temperature rises up to 103°F but fall below normal towards death. Gastrointestinal symptoms are rare.

**General Treatment**

- Stomach wash and mild laxatives are given
- Polyvalent botulinum antitoxin should be given
- Supportive treatment and fluid electrolyte balance should be maintained
- Administration of artificial respiration

**Postmortem Appearances**

- Kidney, liver, meninges are congested
- Hyperemia of alimentary tract
- Degenerative changes occur in liver and kidney
Prevention of food poisoning

I. Buying Grocery Guidelines
- Buy meat and sea food items only from hygienic outlets
- Do not buy items whose expiry date has been expired
- Do not buy items containing under cooked or raw animal derived ingredient
- Buy only pasteurized milk or cheese
- Do not buy eggs which are cracked or leaking.

II. Storage Guidelines
- Take groceries directly at home and store immediately in the refrigerator
- Always store raw meat, poultry or sea food in plastic bags in the refrigerator
- Purchased hot food should be consumed immediately or kept hot or refrigerated
- Do not store eggs in the egg section of refrigerator. Instead place them in the cartons and store them in the main section of refrigerator for adequate cooling
- Never leave cut vegetables or meat in the open. Refrigerate them or cook them
- Ensure that temperature in the main section of the refrigerator should be below 4°C and that of freezer is below -18°C.

III. Cooking Guidelines
- Cook all meat and sea food thoroughly before consuming
- Cook eggs properly until both the yolk and white are firm. Never eat runny yolk
- Reheat food or heat partially cooked foods all the way through to at least 74°C
- If any food item looks or smells bad or suspicious, discard it.

IV. Hygiene Guidelines
- Wash hands, utensils, counters, cutting surfaces with water and soap
- Use plastic or glass cutting boards for slicing vegetables or meat
- Wash fresh fruits and vegetables under running water
- Avoid consuming uncooked animal derived dishes
- Do not eat under cooked meat or poultry
- Do not consume egg preparation with runny yolk
- Drink only boiled or bottled water
- Do not eat properly washed raw vegetables and salads
- Do not buy food items from roadside vendors
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