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Review Article

PROMINENT MICROBIAL FOOD-BORNE DISEASES: A REVIEW ON ITS INFLUENCE TO PUBLIC HEALTH

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ABSTRACT

Problems of food-borne infections and food protection are related to many different environmental factors and to social and technological changes. Food-borne infections involve the interchain of production, processing and distribution of food. The level of community sanitation is important and the role of food habits and culture is increasingly being recognized in both developed and developing countries. Investigation of food-borne infections should take all these factors into account. Food hygiene problems are likely to occur, since he necessary technology is seldom available and there may be little hygienic knowledge, food surveillance and control.

Key words: Bacteria, Microbe, Food borne infections, Public health

INTRODUCTION

Food is the substances which one or more utilizable form of basic substances, which are required for carrying out the functions. In a general way, it is involved in the functioning of the body processes.

Food Surveillance

Food-borne infections and intoxications

There are so many food-borne infections and intoxications are present in our environment. Some of these important food-borne infections and intoxications are discussed here.

Bacterial Infections

Salmonella

The incubation period of Salmonella is 12-72 hours. The symptoms of illness include diarrhea, fever, abdominal cramps, vomiting. Duration of illness is 4-7 days. Salmonellosis is the most frequently reported food-borne infection of humans. Food habits and the way in which food is prepared play a major role in the occurrence of Salmonellosis. Contaminated eggs, poultry, meat, unpasteurized milk or juice, cheese, contaminated raw fruits and vegetables are the main sources of infection.The serotypes principally responsible for human morbidity are *Salmonella typhimurium, Salmonella hydelberg, Salmonella enteritidis and Salmonella panama.*[1-3]

Prevention and Control

- Separate cooked foods from ready-to-eat foods.
- Cook foods to a safe temperature.
- Chill foods promptly after serving and when transporting from one place to another.
- Wash your hand Avoid eating high-risk foods, including raw or precooked food, eggs, undercooked beef or chicken and unpasteurized milk.
- Food should be refrigerated before cooking.
- Clean hands with soap and warm water before handling food.
- After contact with animals, their food and their living environment.

Shigella

The *Shigella* is a bacteria that can cause diarrhoea in humans. People with shigellosis shed the bacteria in their faeces. The bacteria can spread from an infected person to contaminate water or food, or directly to another person. Getting just a little bit of the *Shigella* bacteria into mouth is enough to cause symptoms. The illness is most commonly seen in children. Shigellosis is a cause of traveler's diarrhea, from contaminated food and water in developing countries. The main source of shigellosis is through contaminated food or water, or contact with an infected person. Foods most often associated with *Shigella* outbreaks are salads and sandwiches that involve a lot of hand contact in their preparation, and raw vegetables contaminated in the field. The Incubation period is 1-7 days (usually 1-3 days). The symptoms include sudden abdominal cramping, fever, diarrhea that may be bloody or contains mucus, nausea and vomiting. Duration of illness is 2-7 days. Children of 2-4 years are at more risk. Shigellosis is a food-borne infection caused by *Shigella*.[4-6]

Prevention and Control

- Do not prepare food for others while ill with diarrhea
- Avoid swallowing water from ponds, lakes, or untreated pools.
- Wash hands with soap carefully and frequently, especially after going to the bathroom, after changing diapers, and before preparing foods or beverages.
- Dispose of soiled diapers properly

Staphylococcus

The multiplication of certain strains of Staphylococcus leads to the appearance of enterotoxin. It seems that certain enterotoxin is produced by the "Enterotoxic" strains. Enterotoxin to be pathogenic for man must be present in food stuff in sufficient quantity. Substantial multiplication of the contaminating Staphylococci is therefore necessary. Conditions favourable for multiplication of Staphylococci are high temperature i.e. 30°C-40°C, High pH, high salt or sugar content product. *Staphylococcus aureus* is a type of bacteria commonly found on the skin and hair as well as in the noses and throats of human and animals. These bacteria are present in up to 25 percent of healthy people and are even more common among those with skin, eye, nose or throat infections. *Staphylococcus* can cause food poisoning when a food handler contaminates food and then the food is not properly refrigerated. Other sources of food contamination include the equipment and surfaces on which food is prepared. These bacteria multiply quickly at room temperature to produce a toxin that causes illness. The source of infection are foods that are made with hand contact and require no additional cooking, such as salads, ham, egg, chicken potato. Bakery products, such as cream-filled pastries, cream pies and chocolate. Other sources include milk and dairy products, as well as meat, poultry, eggs, and related products. The incubation period is 1-6 hours. Symptoms include Nausea, vomiting, diarrhea, loss of appetite, severe abdominal cramps, mild fever. Duration of illness is 24-48 hours.[7-10]

Prevention and Control

- Keep kitchens and food-serving areas clean and sanitized.
- If food is prepared more than two hours before serving, keep hot foods hot (over 60°C) and cold foods cold (5°C).
- Store cooked food in a wide, shallow container and refrigerate as soon as possible.
- Wash hands with soap and water before handling and preparing food.
- Do not prepare food if you have a nose or eye infection.
- Do not prepare or serve food for others if you have wounds or skin infections on your hands.

Clostridium botulinum

Human botulism results from the consumption of food in which *Clostridium botulinum* has grown and produced its toxin. Most of the recognized outbreaks of botulism in man have been caused by types A, B and E. Type C and D are usually associated with the infection in animals such as Mink, Water fowl, Cattle and Other domesticated species. The main source of *Clostridium botulinum* are Infants: Honey, home-canned vegetables and fruits, corn syrup, Children and adults: Home-canned foods with a low acid content, improperly canned commercial foods, home-canned or fermented fish, herb-infused oils, baked potatoes in aluminum foil, cheese sauce, bottled garlic, foods held warm for extended periods of time. The incubation period is for infants: 3-30 days and for children and adults: 12-72 hours. Symptoms include Infants: Lethargy, weakness, poor feeding, and constipation. Children and adults: Double vision, blurred vision, drooping eyelids, slurred speech, difficulty swallowing, dry mouth and muscle weakness. Duration of illness is variable.[11-13]

Prevention and Control

- Destruction of the spores by heating or irradiation
- Inhibiting the growth by –
  - Reduction of the temperature through freezing or refrigeration
  - Addition of inhibiting chemicals such as Nitrites
  - Inactivation of preformed toxin by cooking.
  - Reduction of pH through acidification of fermentation
  - Limitation of water content through drying or the addition of salt or sugar

CONCLUSION

Rapid urbanization, technological advances, international shipment of foods, centralization of food processing, long chain of food distribution and changing food habits have all modified the conventional approaches to the epidemiology of food-borne infections. Serious attention must be given to problems that arise in developing countries where food habits are changed through the influence of modern food technology. The inhabitants of such countries have learned to live with of their environment. But new types of foods e.g. processed, precooked and ready to eat food and different ways of handling them introduces new risk.

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