
بسم الله الرحمن الرحيم

GIT Module
CASE BASED LEARNING (CBL)
2nd Year MBBS

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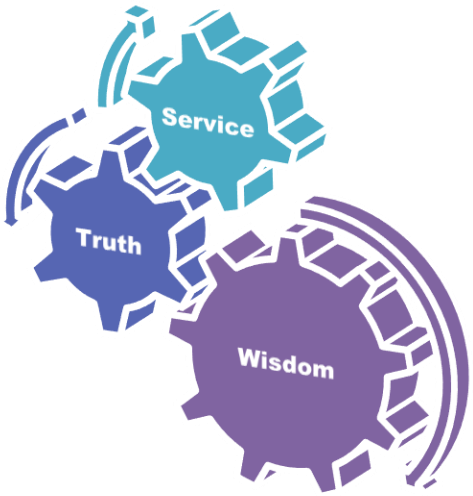
Motto



Vision; The Dream/Tomorrow

- To impart evidence based research oriented medical education
- To provide best possible patient care
- To inculcate the values of mutual respect and ethical practice of medicine

CBL

- Case-based learning (CBL) is a teaching method where students learn by analyzing real-life cases and applying their knowledge to solve problems or make decisions. CBL is often used in medical education, where students analyze patient cases to develop diagnostic and treatment skills.

Conducting CBL

- Identify the learning objectives
- Choose a case: Select a real-life case that is relevant to the learning objectives you have identified
- Present the case
- Analyze the case: Have students work in groups to analyze the case
- Develop hypotheses

Conducting CBL (Cont.)

- Test hypotheses: Have students test their hypotheses by using relevant diagnostic tests or other methods.
- Discuss the results
- Discuss the results
- Evaluate learning: Evaluate student learning by assessing their ability to analyze the case, develop hypotheses, and apply their knowledge of medical physiology to diagnose and treat the patient.

Bloom's Taxonomy : Domains Of Learning

Sr. #	Domain of learning	Abbreviation	Levels of the domain	Meaning
1	cognition	C	C1	Recall / Remembering
2			C2	Understanding
3			C3	Applying / Problem solving
4	Psychomotor	P	P1	Imitation / copying
5			P2	Manipulation / Follows instructions
6			P3	Precision / Can perform accurately
7	Attitude	A	A1	Receiving / Learning
8			A2	Respond / Starts responding to the learned attitude
9			A3	Valuing / starts behaving according to the learned attitude

Learning Objectives

Sr. #	Learning Objective	Domain of Learning
1	To define food poisoning.	C1
2	To describe types of the food poisoning.	C2
3	To understand salmonella food poisoning pathophysiology	C2
4	To understand staphylococcal food poisoning mechanism of action.	C2
5	To investigate the patient of food poisoning.	C3
6	To diagnose botulism.	C3
7	To assess clinical signs and symptoms of food poisoning.	C3

Definition

Food – poisoning is an acute gastro-enteritis caused by the ingestion of the food or drink contaminated with either living bacteria or their toxins or inorganic chemical substances and poison delivered from the plant and animals.

Types Of The Food Poisoning

1. Non – bacterial type of the food poisoning
2. Bacterial Type of the food poisoning

Vertical Integration with Internal Medicine & Pathology

Characteristics

- There is history of the ingestion of the common food.
- Attack of the many persons at the same time.
- Similarity of the sign and symptoms in the majority of the cases.

Non–Bacterial Type Of The Food Poisoning

It is caused by the chemicals such as

A. Arsenic
B. Certain plants
   & sea foods
A. Fertilizer
B. Pesticides
C. Cadmium
D. Mercury

Bacterial Type Of Food Poisoning

It is caused by the ingestion of

the food contaminated by the:-

1. Living bacteria or their toxins
2. Some times both-Multiplication and toxins production .

1. Salmonella Food Poisoning

There is increasing incidences of this type of food poisoning because of

- An increase in communal feeding
- An increase in international trade in humane food
- A higher incidences of the salmonellosis in farm animals
- Wide distribution of the prepared food

Source

Salmonellosis is primarily a disease of the animals. Man get infection from the farm animal & poultry through:

- Contaminated Meat
- Milk & Milk Products
- Sausages
- Custards
- Eggs & Eggs Products

- Rat & mice are another source, they are often heavily infected and contaminate the foodstuffs by their urine & faces

Patho-Physiology

The causative agents on ingestion multiply in the intestine and give rise acute “enteritis & colitis” The onset is generally sudden with:-

- Chills /Fever
- Nausea/Vomiting
- Profuse Watery Diarrhoea (Last 2 – 3 days)
- Convalescent carrier state may lasting for the several weeks
- THE MORTALITY RATE IS 1%

2. Staphylococcal Food Poisoning

2. Staphylococcal Food Poisoning

It is also as common as salmonella food poisoning

- At least five different enterotoxins have been Identified.
- Toxins can be formed at optimum temperature of 35 C to 37C
- These toxins are relatively heat stable and resist a boiling of 30 minutes or more.
- Found on the Skin, Nose, Throat
- Cow suffering from the mastitis have been responsible for the outbreaks of the food poisoning involving the milk and milk products.

Mechanism Of Action

- Incubation period is short because of preformed toxins.
- Food poisoning resulting from the ingestion of the
- preformed toxins in the food.
- In food bacteria have grown (Intra-dietetic toxins).
- Toxins remain in the food after the organism have been destroyed by heating .

Action of The toxins:

- The toxin act directly on the intestine and CNS.

Signs & Symptoms

- Sudden onset of vomiting , Diarrhoea & Abdominal Cramps.
- In severe cases blood & mucus may appear.
- Unlike salmonella food poisoning the staphylococci food poisoning rarely cause the fever.

Death is uncommon

Stool culture

- A stool culture is used to detect the presence of disease causing bacteria (pathogenic) and help diagnose an infection of the digestive tract.

Botulism

Botulism derived its name from Latin word (Sausage = Botulus).

- Most serious type but occurs rarely. It kills about 2/3rd of the victims.
- Botulinum toxin (BTX) is a neurotoxic protein In produced by the bacterium Clostridium botulinum.
- Botulinum toxin is broken into 8 neurotoxins which are antigenically distinct but structurally similar.
- Exotoxin of the clostridium botulinum generally type A, B or E cause toxicity in man.

Source

- The bacteria is widely distributed in soil, dust and intestinal tract of the animals.
- The organism enters into the food as spores.

Food Responsible For The Botulism:

- These are preserved home food such as
- Home – canned vegetables, Smoked or pickled fish
- Home made cheese
- Other low – acid foods

Incubation Period

12 – 36 hours

Vertical Integration
with Internal Medicine
& Pathology

Mechanism Of Action

Under suitable anaerobic condition the toxins will be preformed into the foods.

- It act on the parasympathetic nervous system. Its action on the GI – Tract is very slight.
- Botulinum toxin is one of the most powerful known toxins: about one microgram is lethal to humans when inhaled.
- It acts by blocking nerve function through inhibition of the excitatory neurotransmitter acetylcholine release from the pre-synaptic membrane of neuromuscular junctions in the SNS.

Signs & Symptoms

- Dysphagia , Diplopia, Ptosis , Dysarthria , Blurring of the vision Muscle weakness & even quadriplegia
- Fever is generally absent.
- Consciousness is generally retained.
- The condition is generally fatal.
- Death occurs 4 – 8 days later due to respiratory or cardiac failure.

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Prevention

A recommended prevention measure for infant botulism is to avoid giving honey to infants less than 12 months of age, as botulinum spores are often present.

- In older children and adults the normal intestinal bacteria suppress development of C. botulinum.
- Foods contaminated with the botulism toxins heated for 100 C for a few minutes are safe for consumption.
- Commercially canned goods are required to undergo a "botulinum cook" in a pressure cooker at 121 °C (250 °F) for 3 minutes.

Cl – Perfringens Poisoning

- It is less common type of the food poisoning
- There is rapid recovery no any death due to this type of the poisoning.
- Symptoms start 6-24 hours after ingestion
- Once ingested, forms several toxins in the intestine
- No defined food vehicle but usually meat, poultry, gravy
- Also responsible for gas gangrene.

Sources

- The organism have been found in to the faces of the humane and animals, soil, water and air.
- The majority of the outbreak have been associated with the ingestion of the Meat, meal dishes and poultry.
- The usual story is that food has been stored and cooked 24 hour or more before the consumption and allow to cool slowly at room temperature and then heated immediately prior to serving.
- Incubation Period is between the 6 – 24 hours

Vertical Integration with Internal Medicine & Pathology

Clinical Symptoms

The most common symptoms are:

- Diarrhoea, Abdominal Cramps
- Little or no fever
- These symptoms occurring 8 – 24 hours after the consumption of the food
- Nausea & vomiting are rare
- Illness is usually of the short duration (1 day or less)
- The organism multiply between the 30C –50C and produce a variety of the toxins such as Alpha – toxin, theta – toxins

The Main Food Poisoning Bacteria

Type of food poisoning	Where the bacteria come from	Onset time	Symptoms
Salmonella	Raw meat, eggs, poultry, animals	6 - 72 hours	Abdominal pains, diarrhoea, fever, vomiting, dehydration
Clostridium perfringens	Raw meat, soil, excreta, insects	8 - 72 hours	Abdominal pain, diarrhoea
Staphylococcus aureus	Skin, nose, cuts, raw milk	1 - 6 hours	Vomiting, abdominal pains, lower than normal temperature

Vertical Integration with Internal Medicine & Pathology

Investigation Of The Food Poisoning

1. Secure complete list of the people involved and their history
2. Laboratory Investigation
3. Animal Experiments
4. Blood for the antibodies
5. Environmental Study
6. Analysis of the data according to descriptive method of time, place and person.

Ten Golden Rules World Health Organisation

1. Cook raw food thoroughly.
2. Eat cooked food immediately
3. Prepare food for only one meal
4. Avoid contact between raw foods and cooked foods
5. Choose foods processed for safety.
6. Wash hands repeatedly
7. Keep all food preparation premises meticulously clean
8. Use safe water
9. Be cautious with foods purchased outside
10. Breast-feed infants and young children

Case Study/ Brain Storming/ Vertical Integration with Internal Medicine & Surgery

Clinical Scenario:-

A 45-year male presents to the emergency room with a two-day history of progressive weakness and difficulty swallowing. The patient mentions attending a family gathering where homemade canned vegetables and smoked fish were served. His symptoms started with blurred vision, followed by double vision, and now he has difficulty speaking and swallowing. On examination, the patient exhibits bilateral ptosis, dysphagia, dysarthria, and generalized muscle weakness. There is no fever, and consciousness is retained.

Question Related to Scenario

Question 1 : What is you diagnosis considering the signs and symptoms of this patient?

Answer: Given the history of consuming home-canned vegetables and smoked fish, botulism is suspected.

Question Related to Scenario

Question 2 : How does the ingestion of contaminated food lead to the development of botulism?

Answer:

Ingestion of Contaminated Food Leading to Botulism:

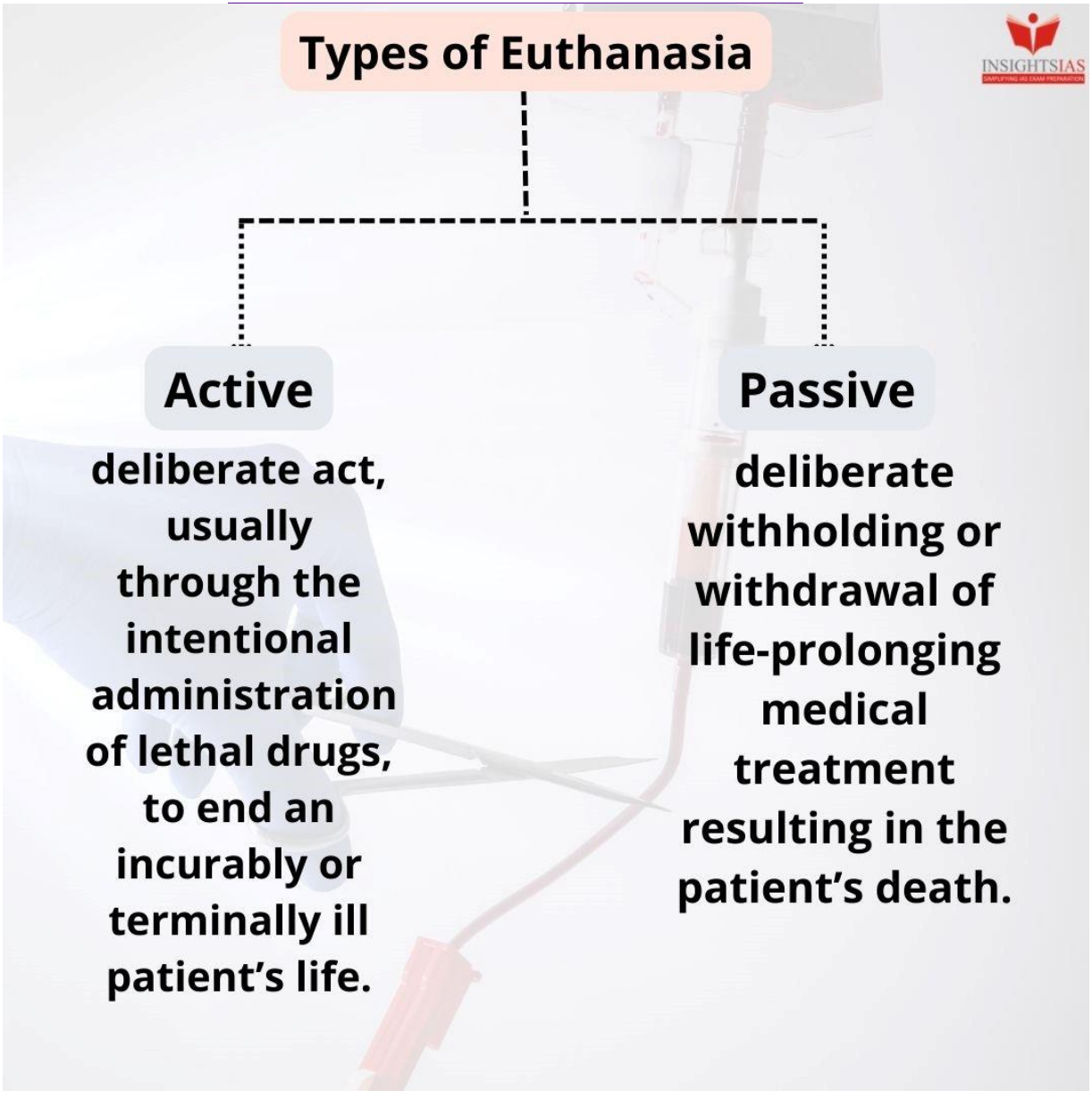
- Botulinum toxin, produced by Clostridium botulinum, enters preserved home foods (e.g., home-canned vegetables, smoked or pickled fish).
- Under suitable anaerobic conditions, toxins are preformed in the food.
- The toxin acts on the parasympathetic nervous system and inhibits acetylcholine release, causing neuromuscular dysfunction.

Biomedical Ethics

Euthanasia:-

The term “Euthanasia” is derived from Greek, literally meaning **“good death”.** taken in its common usage, however, euthanasia refers to the **Termination of a person’s life, to end their suffering, usually from an incurable or terminal condition**. it is for this reason that euthanasia was also coined the name **“Mercy Killing”.**

EUTHANASIA:-


Types of Euthanasia
INSIGHTSIAS
Active
deliberate act, usually through the intentional administration of lethal drugs, to end an incurably or terminally ill patient's life.
Passive
deliberate withholding or withdrawal of life-prolonging medical treatment resulting in the patient's death.

Suggested research article

Healthcare (Basel). 2023 May; 11(10): 1398.
Published online 2023 May 11. doi: 10.3390/healthcare11101398
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PMID: 37239684

A Retrospective Study of Epidemiological Correlations of Food, Drug and Chemical Poisoning in Al-Baha, Western Saudi Arabia

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Abstract

Go to:

Poisoning is a common and severe problem worldwide. Due to significant growth in the agricultural, chemical, and pharmaceutical industries over the past few decades, poisoning risks have increased with the use of food, chemicals, and medicines everywhere in the world, especially in Saudi Arabia. Advanced information on acute poisoning patterns is critical for the effective management of poisoning events. This study aimed to examine the characteristics of patients with various patterns of acute poisoning, caused by food, drugs, and chemicals, that were reported to the Department of Toxicology and Poison Center at King Fahad Hospital and the Poison Center in Al-Baha Province, Saudi Arabia. The study also examined the relationship between demographic characteristics, including age, toxin type, and geographical distribution, and poisonings in Baha Province. This retrospective cross-sectional analysis included 622 poisoning cases.

Link:- https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10218255/

Summary Of Research Article

More men than women experienced acute poisoning, with young adults aged 1–20 years being the most vulnerable. We also discovered that the vast majority of poisonings were unintentional, with very few intentional poisonings. The results of the current study showed that pharmaceutical and chemical items were the primary causes of poisoning in Al-Baha. According to our findings, therapeutic drugs were the most commonly implicated group of toxic agents, followed by pesticides and alcohols, particularly methanol. Poisoning from analgesics, anticonvulsants, and antipsychotics was more common than poisoning from other therapeutic drugs.

REFERENCE BOOKS:

Guyton And Hall textbook of Medical Physiology 14th Edition.

Davidson's Principles and Practice of Medicine - 24th Edition

Oxford Handbook of Clinical Medicine

Research Article Link:-

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10218255/

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Thank You!