Gut and Liver in ID

DR VIJAYALAKSHMI BALAKRISHNAN,
MD., DNB., DTM&H., MRCP(UK)., FRCP(GLAS)
SENIOR CONSULTANT IN INFECTIOUS DISEASES
Our Gut, a perfect sewage system
Any structural or functional disruption - chaos
Gut Infections

Functional
• Parasitic infections
• Bacterial infections
• Sepsis from neutropenia

Structural
• Appendicitis
• Cholecystitis
• Diverticulitis
• Colic syndromes
• Peritonitis
• Intra abdominal collections
Case Scenario

• 34 yrs old male
• H/o solitary rectal ulcer with GI Bleeding
• Surgical resection with colo anal anastomosis
• Post operative fever/ intra abdominal collection
• Given antibiotics and antifungals for a long time
• Presents 6 months subsequently with 10 kg weight loss, loss of appetite, asthenia, abd pain, passing mucous per stool

• CT Abdomen shows presacral collection and multiple loculated collection
• Usg guided pus drained and antibiotic started.
• Repeated imaging still collection
• Resurgery
• Colostomy
• Fever in the post op period
• Pus cultures, antibiotics
• Stricture at the anastamotic site
• Dilatation- fever and abdominal collection
Pus cultures

- Initially ciprofloxacin sensitive E Coli
- Post op Cipro resistant E Coli
- Then Pseudomonas
- Post dilatation Carbapenem resistant Acinetobacter and Ampicillin resistant Enterococci
• Communication from the gut
• Sinus ending in abscess
• Depending on the gut flora, pathogen changes
Drainage, drainage, drainage....
Antibiotics do not penetrate pus.
Case Scenario

30 yrs old male is brought to ER in shock. He had fever for 2 days followed by rapid deterioration

H/o being insidiously unwell for over 6 months after an admission for fever

H/o loss of 8 kg over 1 year.

Patient is on ATT for 2 months based on X Ray changes
• Pt drowsy arousable
• Thin built, dry flaky skin with some nodules and scratch marks
• BP 60/ ? Hypoxic requiring O2 support
• No specific findings otherwise
Investigations

- TC 12000 with 83% N Platelets 85,000
- Creatinine- 3.1
- LFT altered
- PT/INR prolonged
- ABG- hypoxemia with metabolic acidosis, raised lactates
- Urine R/E Normal
- X Ray Chest Normal
- MP QBC negative
• Patient was started on Meropenem and Teicoplanin
• By 24 hrs, blood cultures grew GNB
• Pansensitive E Coli in Blood
Gram negative sepsis with MODS
No clear primary foci
Disseminated Strongyloidosis and gram negative sepsis

- HIV positive with advanced disease
- Strongyloidosis - tissue migration - leaky gut, co habitant colliforms cause septicemia
- Seen with high dose steroid use
- HTLV infection, common in caribbeans
“Bacteria”

This is their planet, and we are on it because they allow us to be.

- Bill Bryson
Case Scenario

• 55 yrs old male is taken for CABG for triple vessel disease.
• Premordial cardiac function was poor
• Diabetic with nephropathy
• Hypertensive
• During surgery, severe oozing and prolonged hypotension
• Multiple transfusion
• IABP
Post op...

- Ventilatory support
- Arterial line
- Central line
- Dialysis cathether
- IABP
- Foleys catheter
• Temp 100.5
• On ionotrope BP is 100/60 mmHg
• Controlled mode of ventilation
- TC 23000
- LFT T bilirubin 3.2
- PT/INR 1.9
- S creatinine= 3.2 oliguric
- ABG= Hypoxemia and metabolic acidosis
- Cultures sent
• Is he in sepsis?
• Does he require antibiotics?
• Blood cultures Negative
• ET cultures= Pan sensitive Pseudomonas
• Urine culture= Panresistant Klebsiella
• What will be the treatment now?
To this patient..

• Pt was started on Cefo- sulbactam post op.
• After cultures sent, collistin and tigecycline were added
• 3 days subsequently, hypotension briefly, persisting low grade fever.

• TC 12000
• On dialysis
• IABP removed

• Cefo- sulb made to meropenem. Added Fluconazole and teicoplanin
• Blood cultures negative till then.
• Collistin stopped after 7 days
• Fever/ hypotension/ fall in GCS on Day 15
• Blood cultures sent, started on echinocandins, vancomycin and collistin
• Pt succumbed.
• Cultures grew Elizabethkingia
Prolonged prophylactic antibiotics

Kill the resident flora in the gastrogenital, respiratory tract & skin

Replaced with the resident flora in the ICU - Colonization with resistant bugs

Colonised bugs cause infections
Gut microbiota

• Protective role of endogenous flora in gut
• Significant role in gut homeostasis
• The leaky gut
Liver and Pancreas- Himalayas above ganges
Case Scenario

- 65 yrs old diabetic male was transferred from an outside hospital with a diagnosis of acute pancreatitis with MODS
- Ex smoker, non alcoholic, CABG 4 yrs before
- He required ionotropes and ventilatory support. Creatinine was elevated.
- Consious oriented
- By 48 hrs, patient stabilised
By Day 5

- Conscious, Oriented
- Minimal ventilatory support
- Off ionotropes
- Non oliguric AKI persisted, creatinine hovered around 3- 3.5
- TC borderline high
- LFT T Bili- 2 OT/PT/ Alk Po4ase mildly elevated
Emphysematous necrotising pancreatitis
Principles of treatment

- Evacuate the pus
- Relieve the obstruction
- Antibiotics
Pathophysiology...

• Likely macro or micro obstruction of the pancreatic outflow tract
• Destruction of parenchyma by enzymes
• Loss of homeostasis
• Translocation of gut microbiota into the devitalised tissue
• Pyogenic infection
• Sec SIRS/ MODS
To remember...

- Liver and Pancreas are sterile zones next to contaminated area
- Always consider obstruction when they present with a pyogenic infection...
Antibiotics are not antipyretics
Choose antibiotics after considering the putative pathogen.
Antibiotics cannot absorb pus
Antibiotics cannot degrade dead tissue
Antibiotics cannot stop body’s inflammatory response

In simple language now...
Case Scenario

- 24 yrs pregnant lady Ms X is incidentally found to be HBsAg positive during antenatal screening
- What should be done next?
HBeAg Negative
LFT= Normal

Pt is 11 weeks pregnant by then
• What are the possibilities? How do we evaluate them?
• What is the risk to featus with Hep B infection?
• How do we protect the baby?
Pregnancy and asymptomatic Hepatitis B infection is quite common
Pregnancy is uncommon with active infection
Risk in untreated babies is 10-20%
Neonates are given Hep B Immunoglobulin and vaccination to prevent infection
Case Scenario

• 26 yrs old male comes with H/o loose watery stools for 2 days.
• H/o return from a business trip 2 days
• O/E Comfortable
• Systems= Normal
Acute Diarrhoea

- < 6 hours: preformed toxin of S. aureus and B. cereus
- 6-24 hours: preformed toxin of C. perfringens and B. cereus
- 16-72 hours: Noroviruses, ETEC, Vibrio, Salmonella, Shigella, Campylobacter, Yersinia, Shiga toxin-producing E. coli, Giardia, Cyclospora, Cryptosporidium
Investigations...

• Moderate to Severe dehydration
• Blood or pus in stool
• Febrile

No role of cultures in watery diarrhoea less than 24 hrs without alarm symptoms

Epidemics- Cultures and toxin typing
Only proven interventions...

- ORS- Low osmolality/ Rice based
- Zinc
- Vaccination- Measles

Rota virus vaccines

15% effective against all cause severe gastroenteritis and 40-57% of severe rotavirus diarrhoea prevented in high mortality countries

1: Hahn S, BMJ. 2001 Jul 14;323(7304):81-5
Antimotility agent- Loperamide

INDICATIONS

- Mild to moderate traveller’s diarrhea (without clinical signs of invasive diarrhoea)
- Secretory diarrhoea

CONTRA INDICATIONS

- Bloody or suspected inflammatory diarrhoea
- Febrile patients
- Abdominal pain
- Children < 2 y.
Anti microbial agents

- Acute bloody diarrhoea
- Persistent watery diarrhoea
- Presentation with moderate to severe dehydration
- Immunocompromised patients
- Travellers diarrhoea
Antibiotics in Cholera

• Shorten the duration of diarrhoea by about one and a half days
• Reduces the total amount of diarrhoea fluid by half.
• Need for rehydration fluids was also reduced by almost half.
• Shortens the period of contagiousness by reducing the duration of excretion of *Vibrio cholerae* by around 3 days
• Tetracycline or azithromycin appear more effective than others.

* Anti microbial drugs for treating Cholera. Cochrane Infectious Disease group. May 2014
Travellers diarrhoea

- Antibiotic treatment is associated with shorter duration of diarrhoea
- ETEC commonest pathogen

Viruses - Calici/ Adeno

Parasitic infections
- Concerns about resistance
- Anti motility agents

Liver infections - Dyspepsia/ Jaundice/ Abd pain syndrome

• Diffuse liver injury - Acute/ chronic hepatitis - viral/ parasitic
• Infiltrative disorders of liver - Tuberculosis/ Fungal infections
• Focal liver injury - Liver abscess/ parasitic infections
• Liver dysfunction as part of vascular injury - Sepsis with MODS/ Malaria/ Scrub typhus/ Leptospirosis
• Adnexial infections - Cholangitis
A LITTLE HI FROM ME TO YOU,

Thank You

ENJOY TODAY, WHATEVER YOU DO!