

INTESTINAL TUBERCULOSIS

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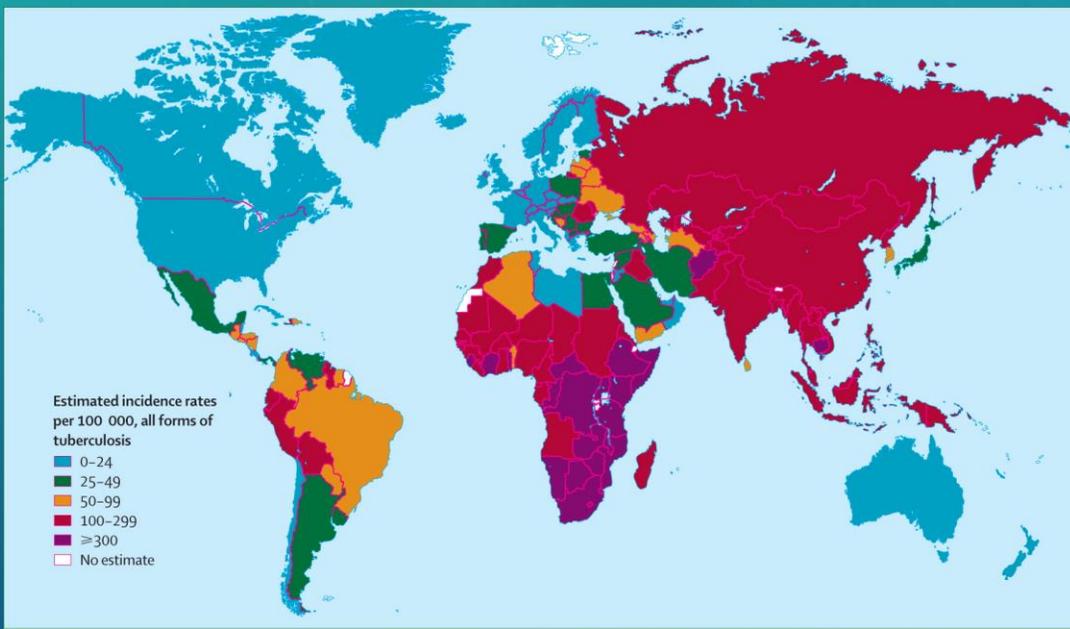
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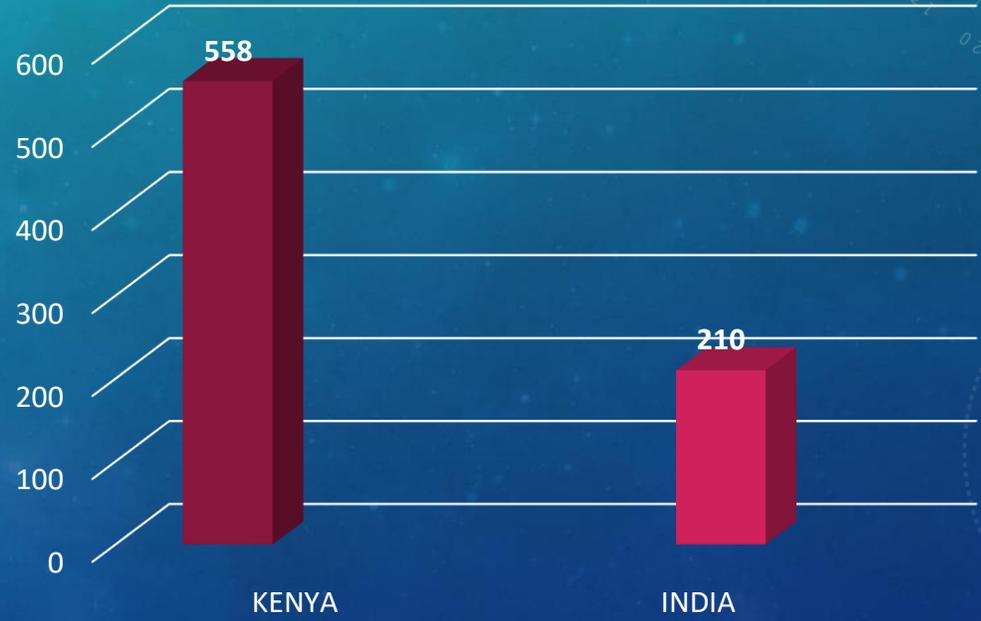
WHY TUBERCULOSIS?

GLOBAL INCIDENCE



<https://www.thelancet.com/journals/lancet/article/PIIS0140673606683840>

INCIDENCE OF TB per 100,000



REALITY

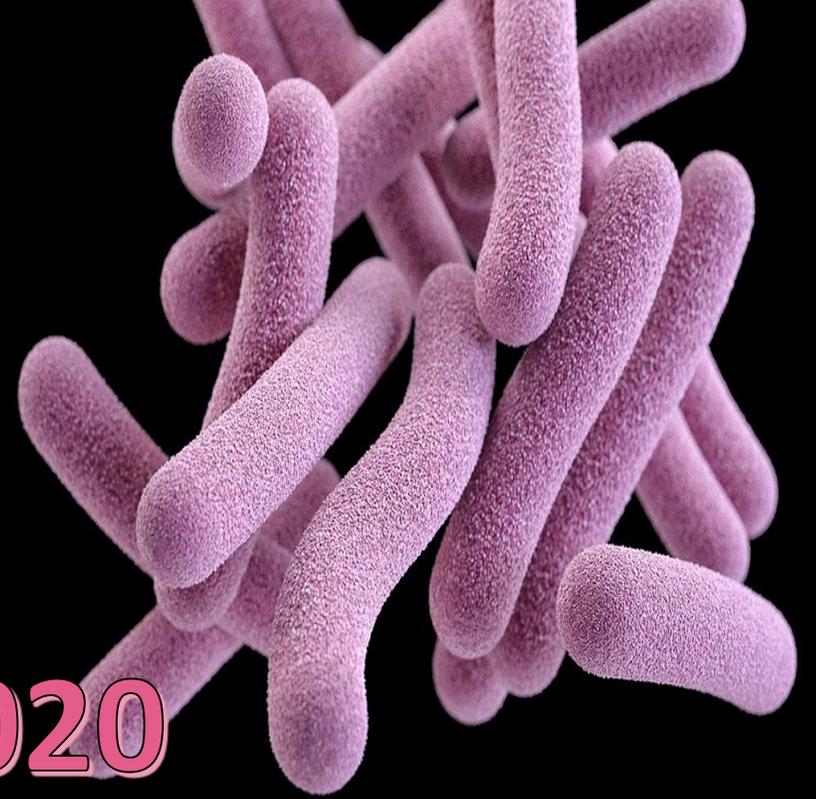
Annual global mortality
= 3,000,000 patients

An Estimation for 2000- 2020

1 billion people will be affected

200 million – symptomatic

35 million – will die (*if controls weak!*)



INTESTINAL TUBERCULOSIS

- A disease that is common to us in India and in Kenya as well.
- A disease that is almost chameleon-like in its myriad presentations.
- Shares plenty of commonality with Crohn's disease.
- Can affect any part of the intestine like Crohn's.
- Can often affect other organs in the body.





IMMUNITY WEAK
TB GERM STRONG

Ulcerative type, deep undermined ulcers
Transverse ulcers in the small intestine
ULCERATIVE TYPE 60%

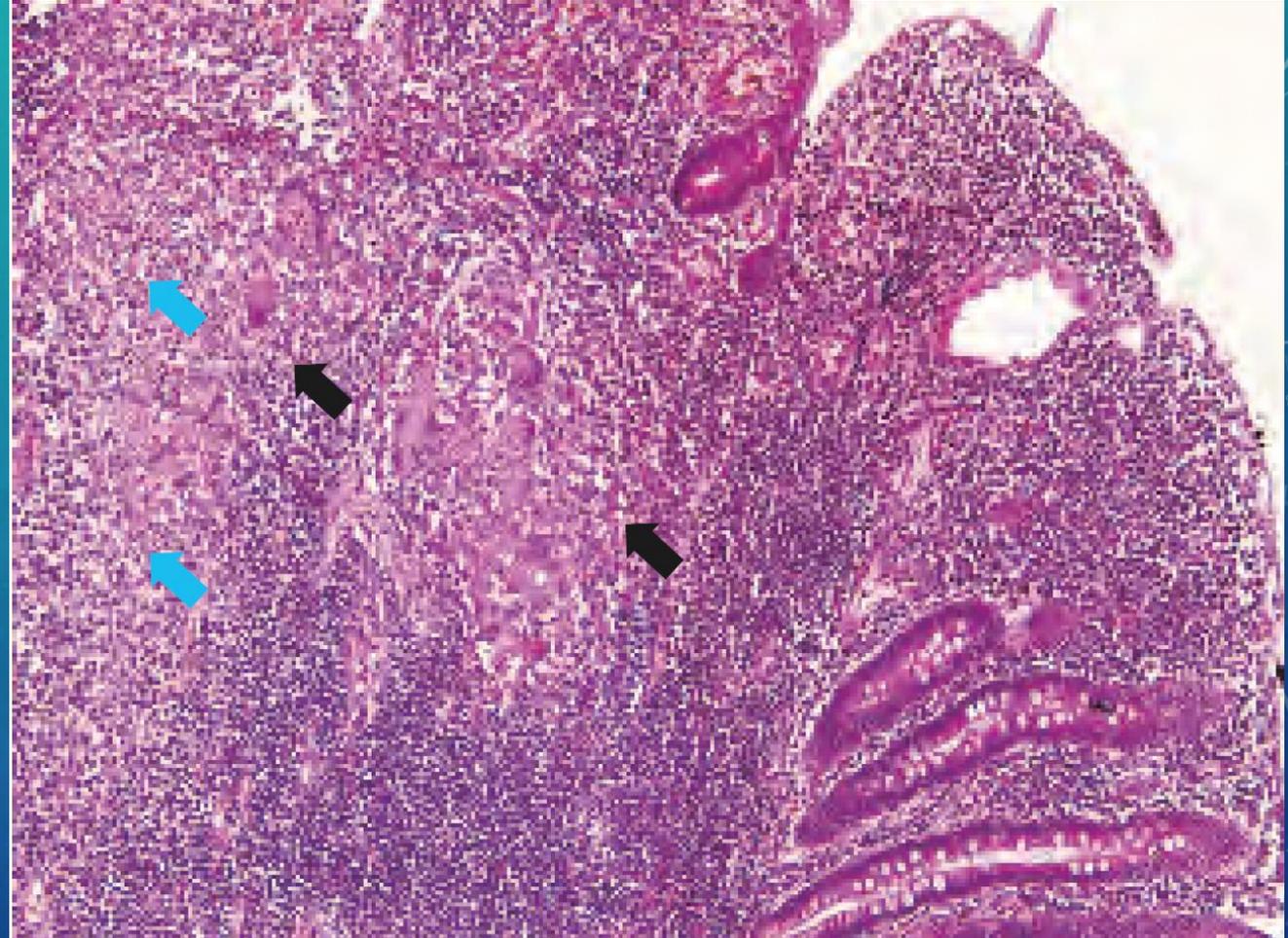
ULCEROHYPERPLASTIC TYPE 30%

IMMUNITY STRONG
TB GERM WEAK

Marked inflammatory reaction with
hyperplasia.
Thickening and narrowing of the
intestine –often causing obstruction.
HYPERPLASTIC TYPE 10%

HISTOLOGY

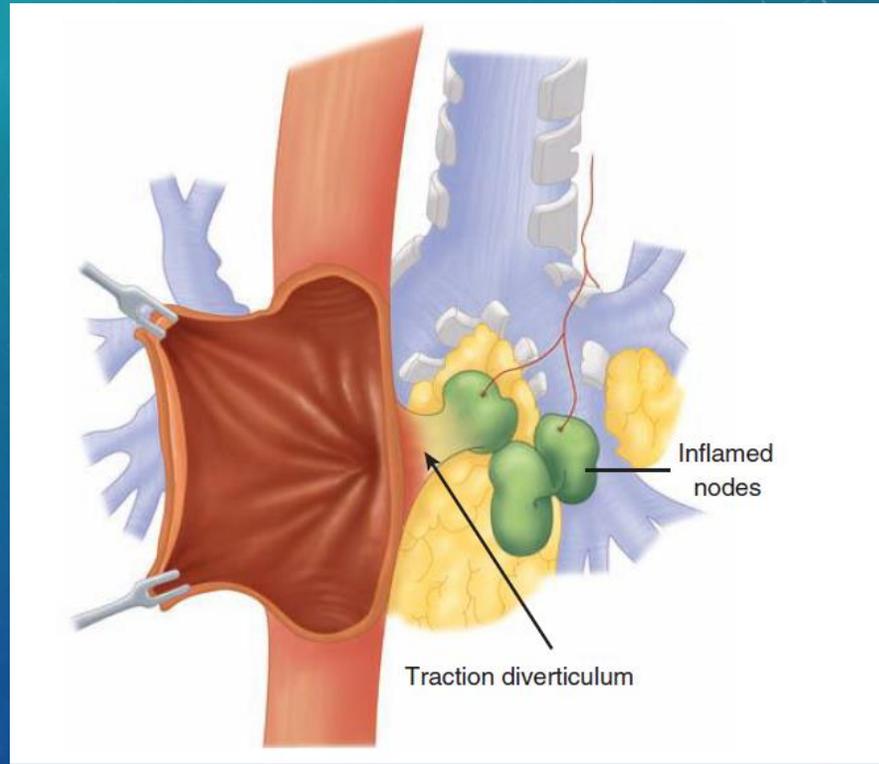
- Epithelioid granuloma with areas of caseation



Bailey and Love's Short Practice of
Surgery 27th ed.

Chapter:- Tropical infections and
infestations.

OESOPHAGUS –TRACTION DIVERTICULUM



[https://www.researchgate.net/publication/307735833_Minimally Invasive_Approach_for_MidEsophageal_and_A_Giant_Epiphrenic_Diverticula_Case_Report/figures?lo=1](https://www.researchgate.net/publication/307735833_Minimally_Invasive_Approach_for_MidEsophageal_and_A_Giant_Epiphrenic_Diverticula_Case_Report/figures?lo=1)

Schwartzs-Principles-of-Surgery-Tenth-Edition

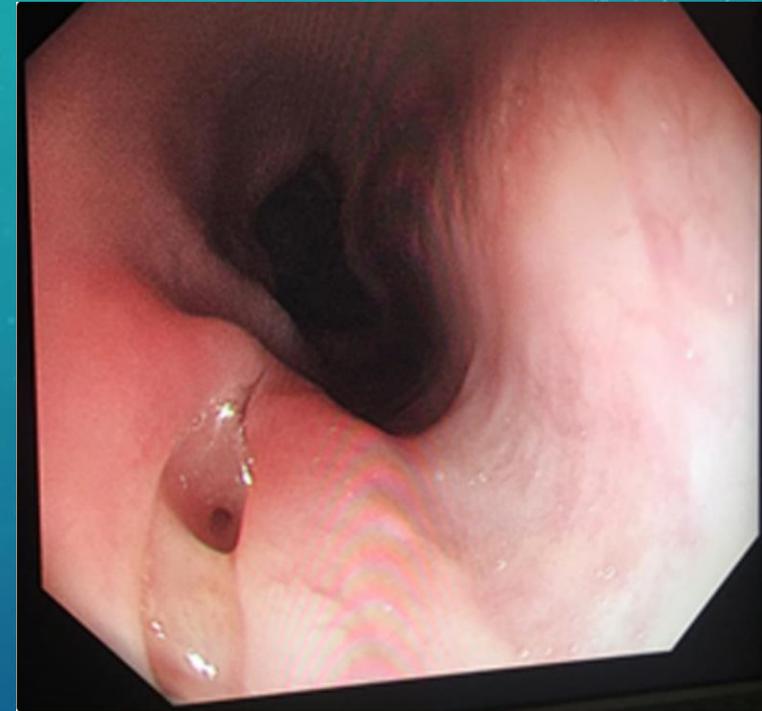


OESOPHAGUS

- First described in the nineteenth century.
- Largely asymptomatic and discovered as incidental findings during a Barium swallow.
- Accepted theory was that adhesions to an inflamed lymph node drew out the wall of the oesophagus.
- Any symptomatic diverticulum **MUST** be investigated for motility disorders. Likely to be a band/spasm distal to the diverticulum when patients presents with dysphagia, regurgitation, chest pain or symptoms of chest complications. (A pulsion diverticulum rather than a traction diverticulum)

OESOPHAGUS

- Other presenting features may be
- Deep ulceration,
- Intramural dissection.
- Fistula formation.

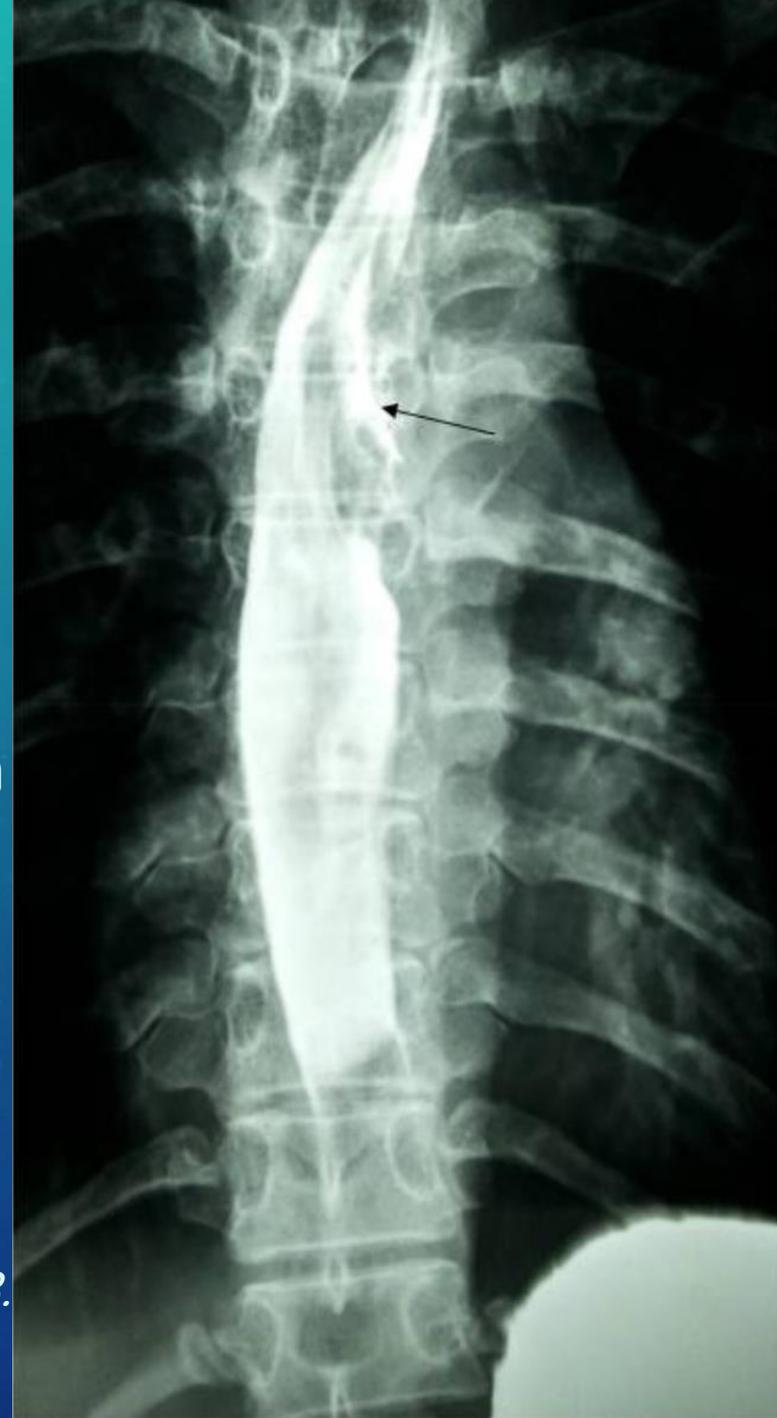


Alharbi SR. Tuberculous esophagomediastinal fistula with concomitant mediastinal bronchial artery aneurysm-acute upper gastrointestinal bleeding: A case report. World J Gastroenterol. 2019 May 7;25(17):2144-2148. doi: 10.3748/wjg.v25.i17.2144. PMID: 31114140; PMCID: PMC6506583.

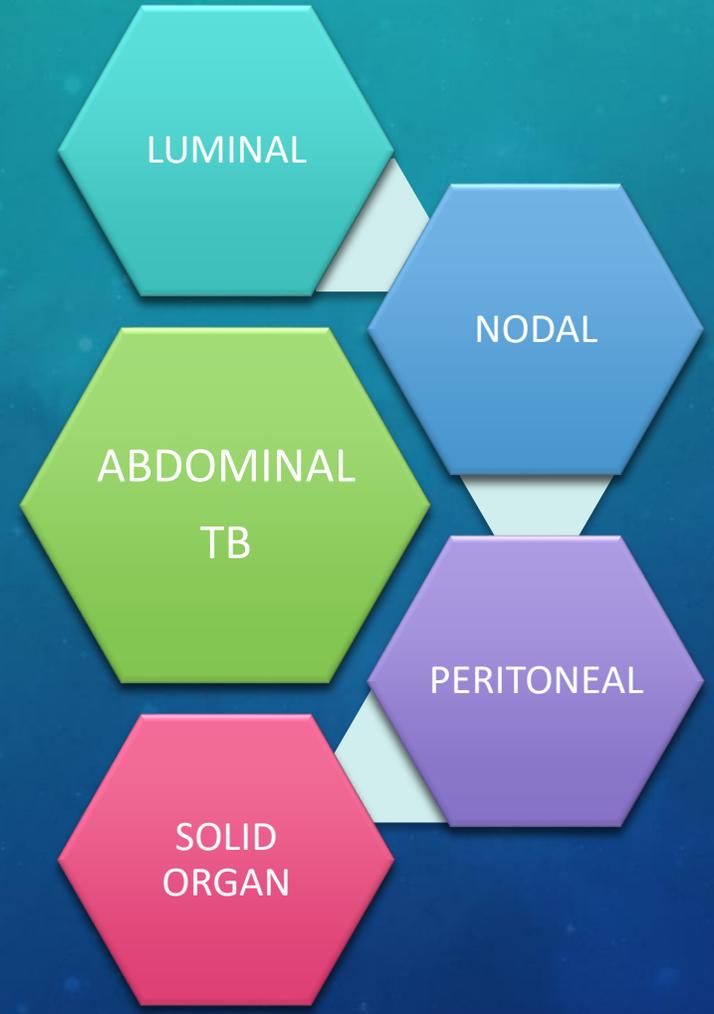
OESOPHAGUS

- Other presenting features may be
- Deep ulceration,
- Intramural dissection.
- Fistula formation. Can often avoid coughing by swallowing in supine position (Ono's sign).

Narayanan S, P V S, Majeed K A A, V U. Tuberculosis presenting as bronchoesophageal fistula. IDCases. 2017 Feb 21;8:19-21. doi: 10.1016/j.idcr.2017.02.008. PMID: 28271046; PMCID: PMC5338911.



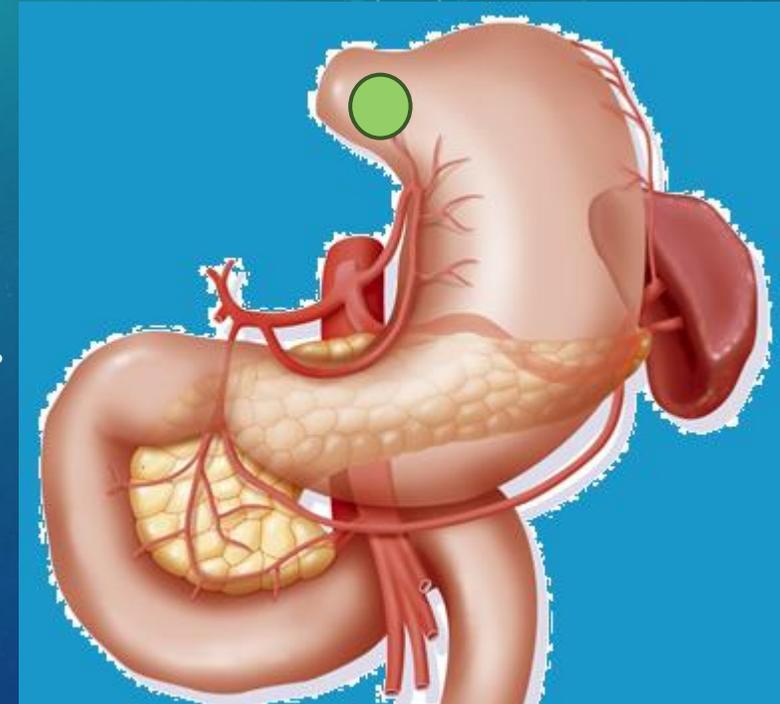
ABDOMINAL TUBERCULOSIS



STOMACH AND DUODENUM

Rare as:-

1. Rapid transit of food bolus through the intestine.
2. High acid content of the gastric chyme.
3. Lymphoid tissue relatively sparse.

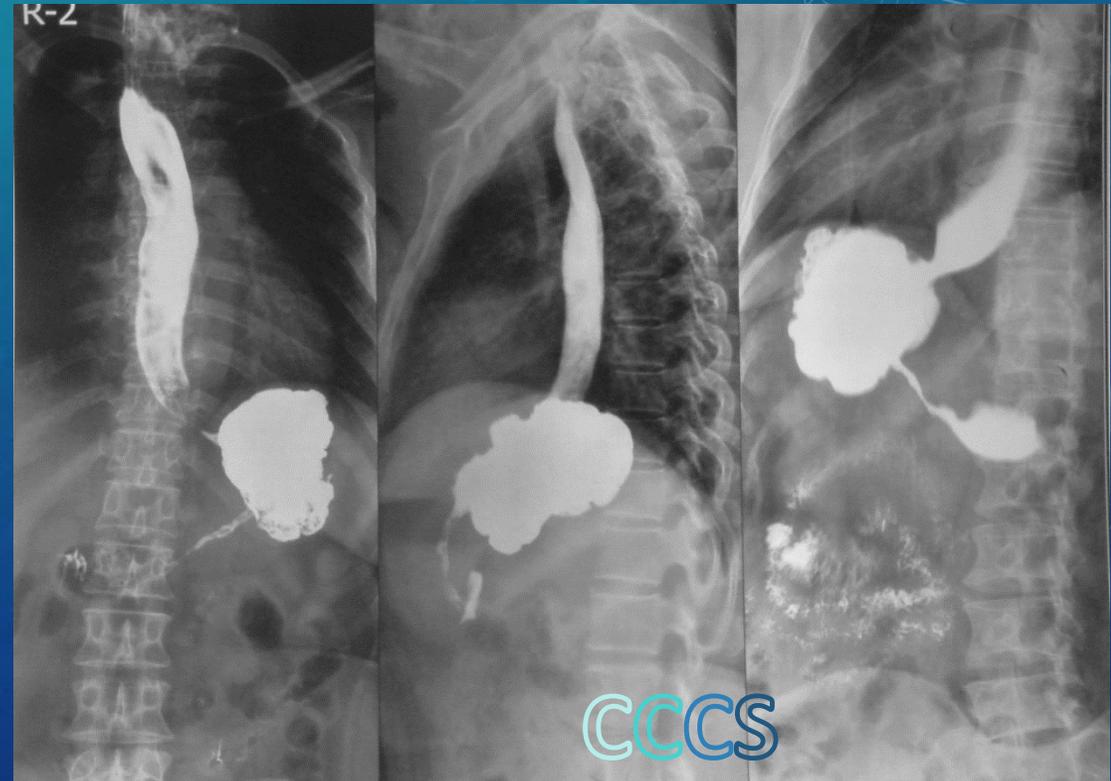


Eltrefi AE, Uwaydah AK, Helal GR, et al Gastric tuberculosis presenting as a large gastric ulcer BMJ Case Reports CP 2022;15:e248215.



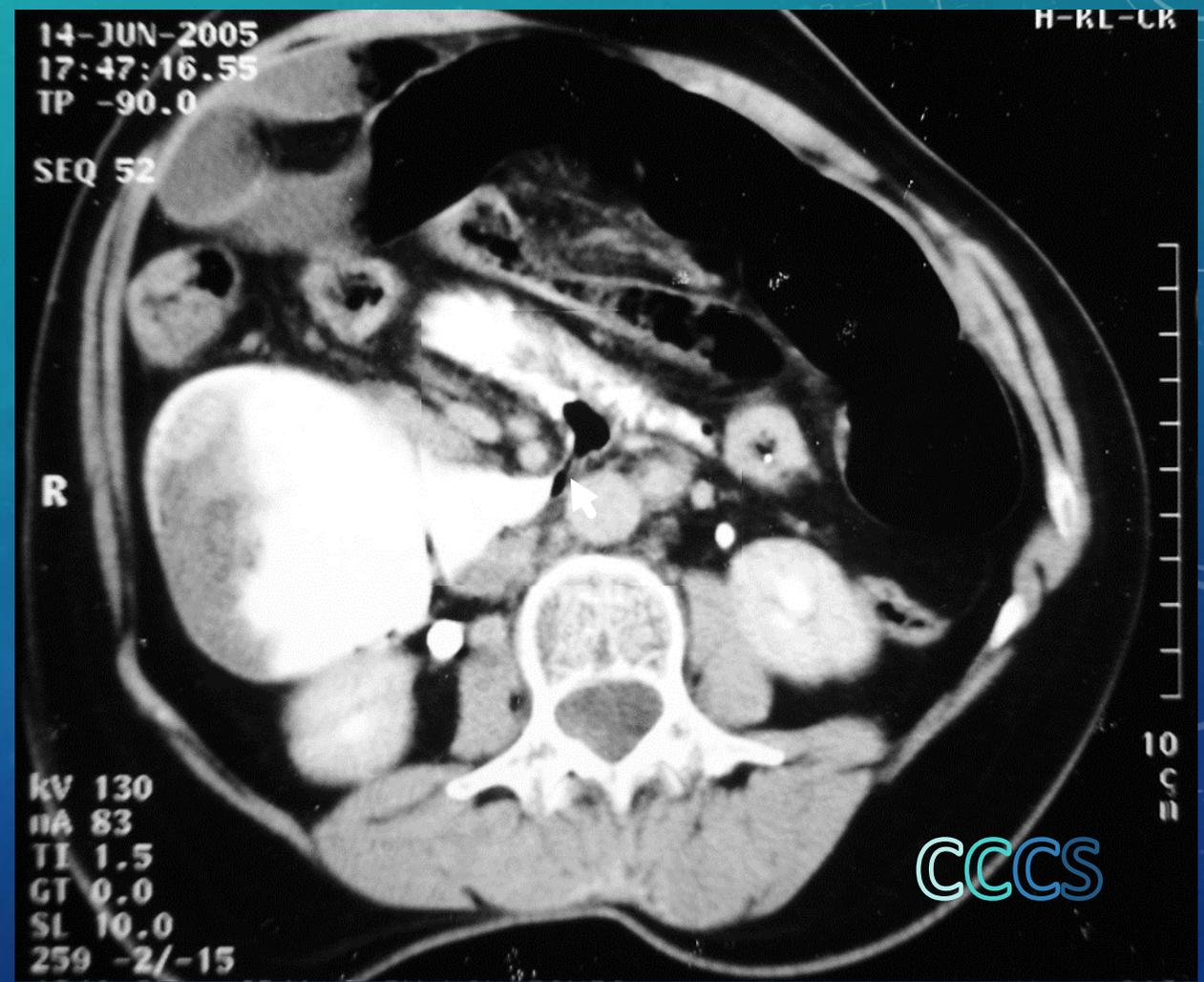
STOMACH AND DUODENUM

- However, these can also be affected:-
- Stomach –
 - Deep ulcers usually distributed at the lesser curve or pylorus,
 - Scarring leads to narrowing – often GOO,
 - Diffuse involvement mimics linitis plastica,
 - Multiple fistula formation rarely present.



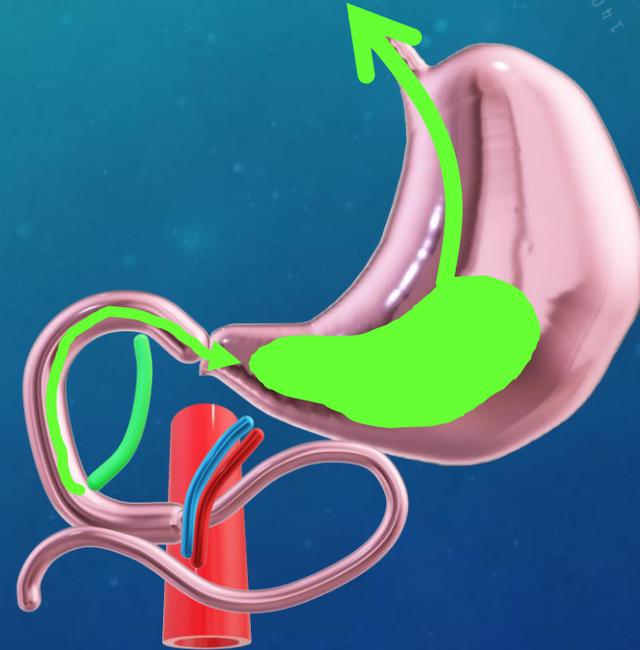
STOMACH AND DUODENUM

- However, these can also be affected:-
- Duodenum
- Ulceration,
- Thickening,
- Stricture formation
- Fistula formation – even AEF reported.

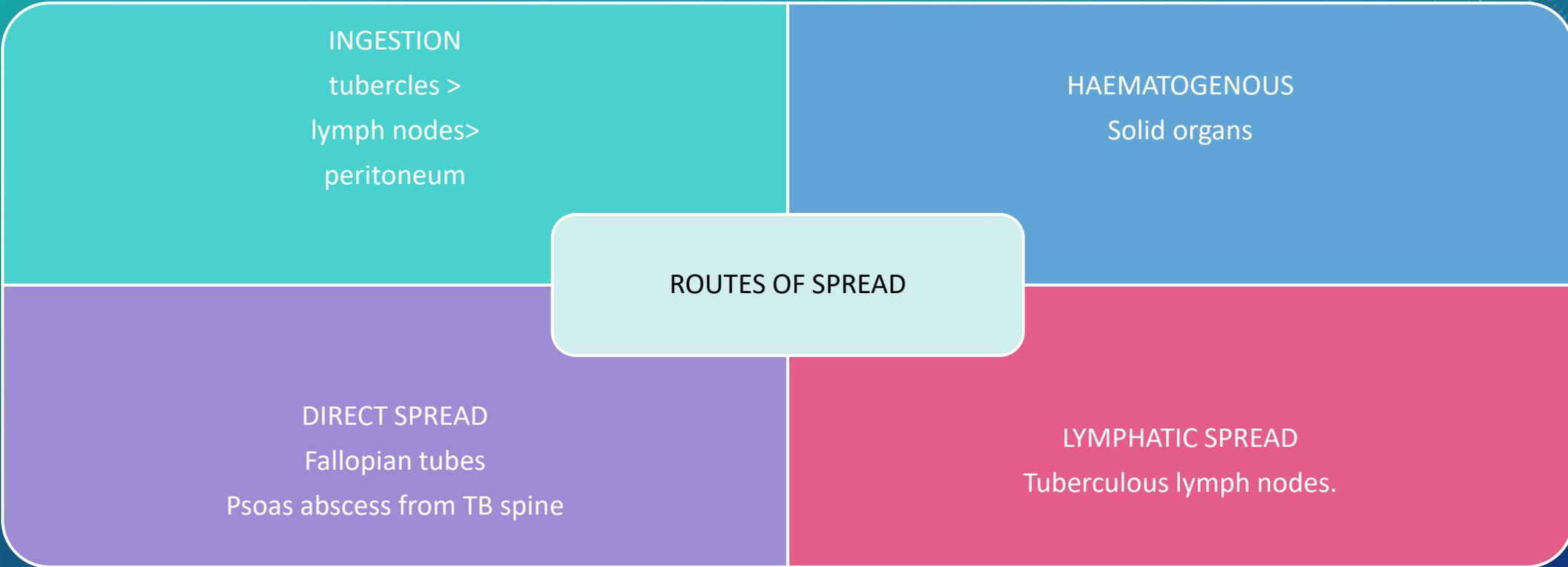


STOMACH AND DUODENUM

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SMALL INTESTINE

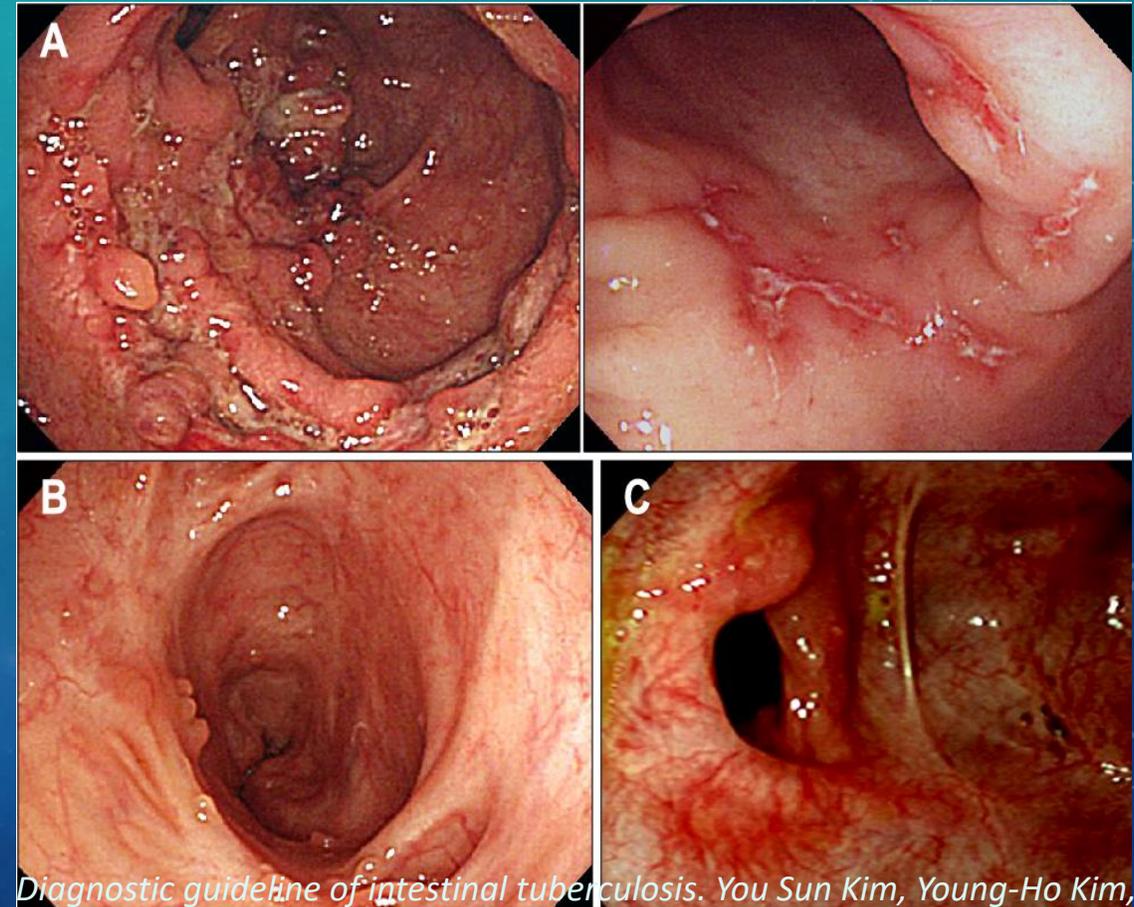
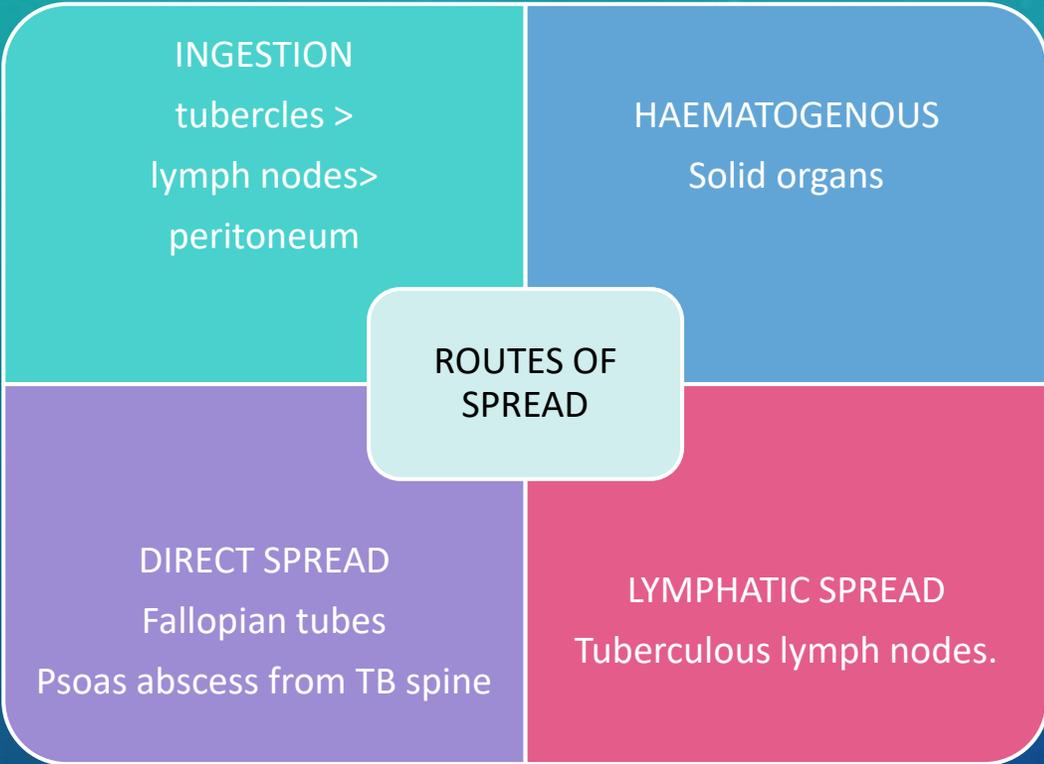


SMALL INTESTINE

- Small intestinal obstruction-
- But –with other clues.

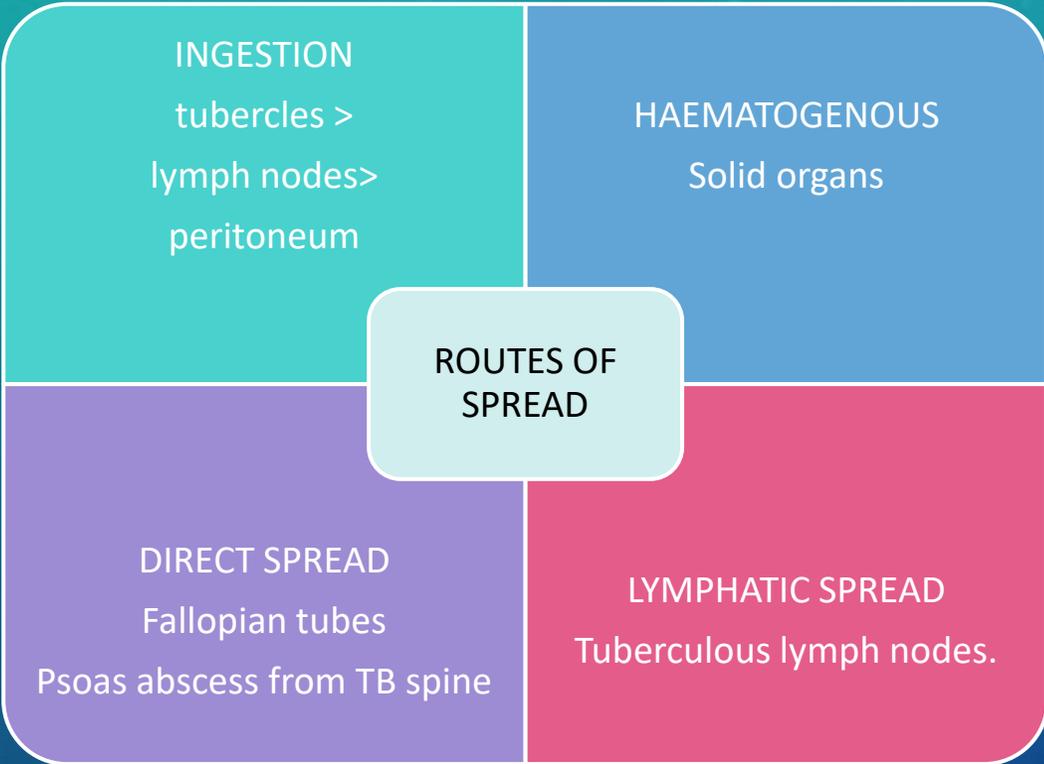


SMALL INTESTINE

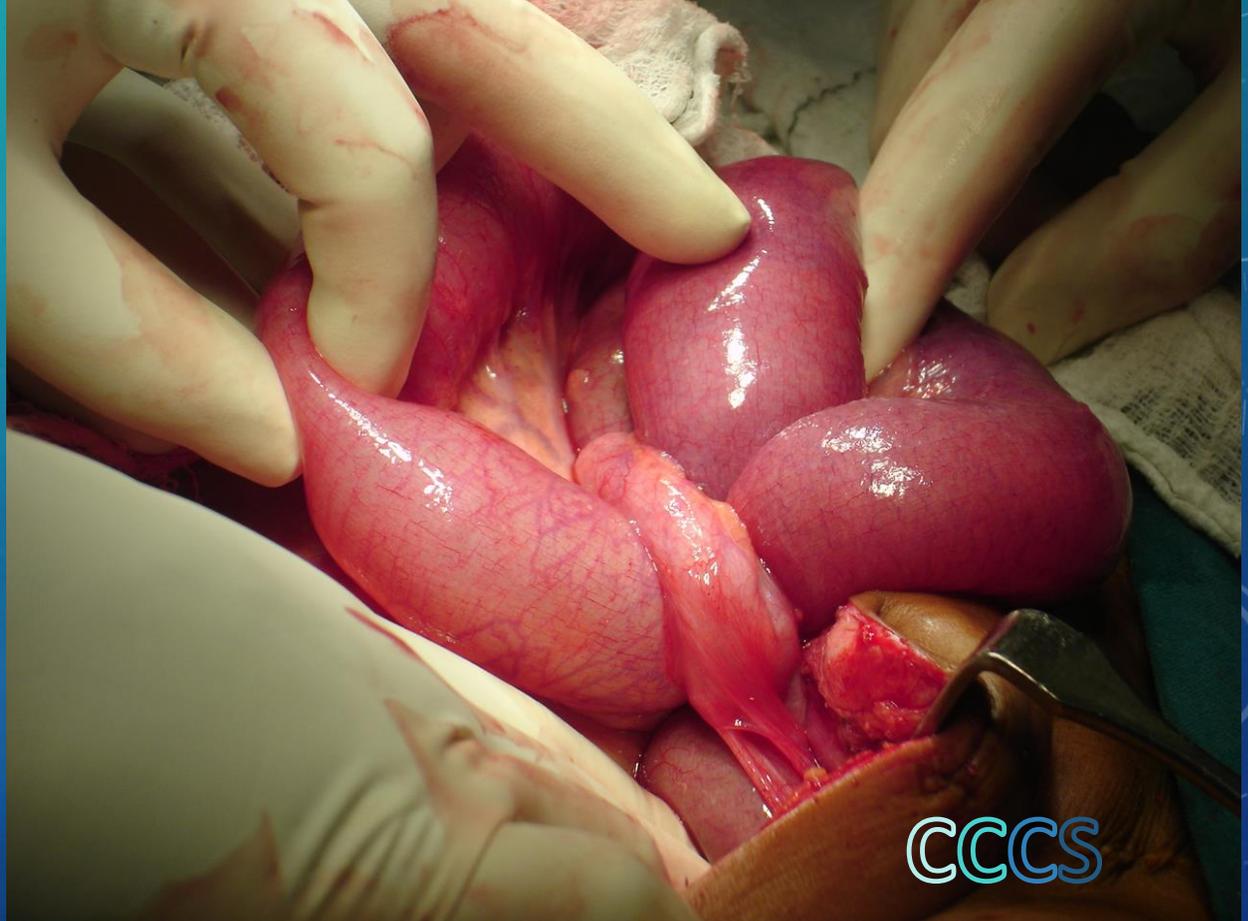
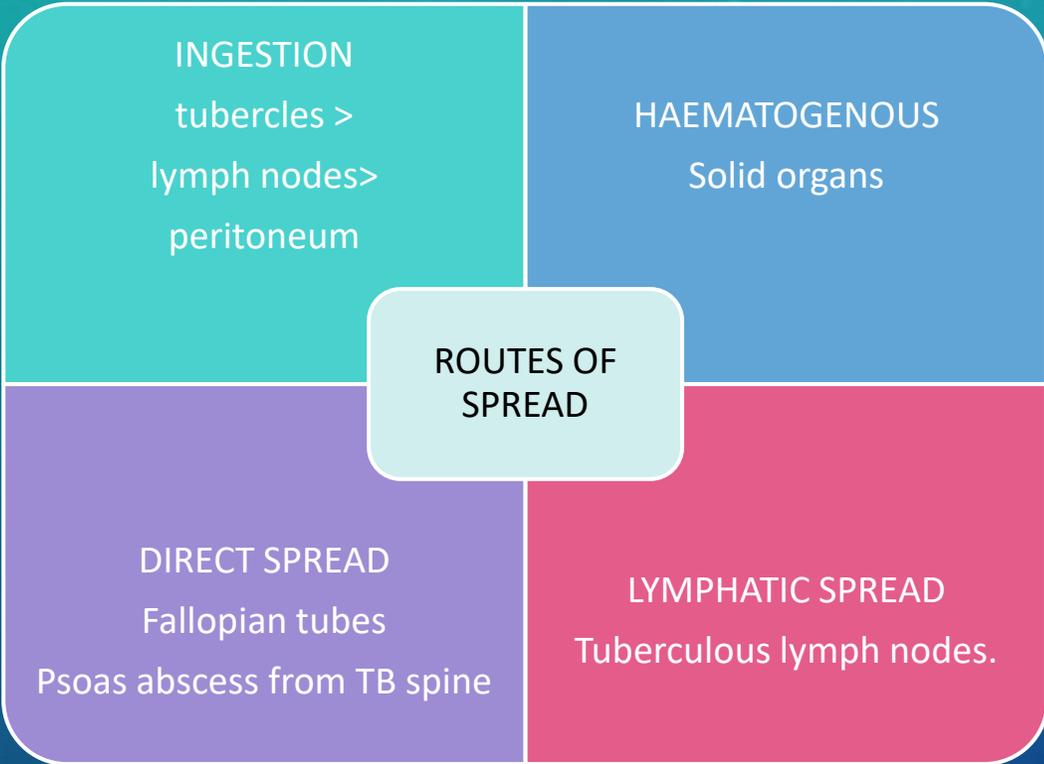


Diagnostic guideline of intestinal tuberculosis. You Sun Kim, Young-Ho Kim, Kang-Moon Lee, J. S. Kim, Young Sook Park; The Korean journal of gastroenterology = Taehan Sohwagi Hakhoe chi 2009

SMALL INTESTINE

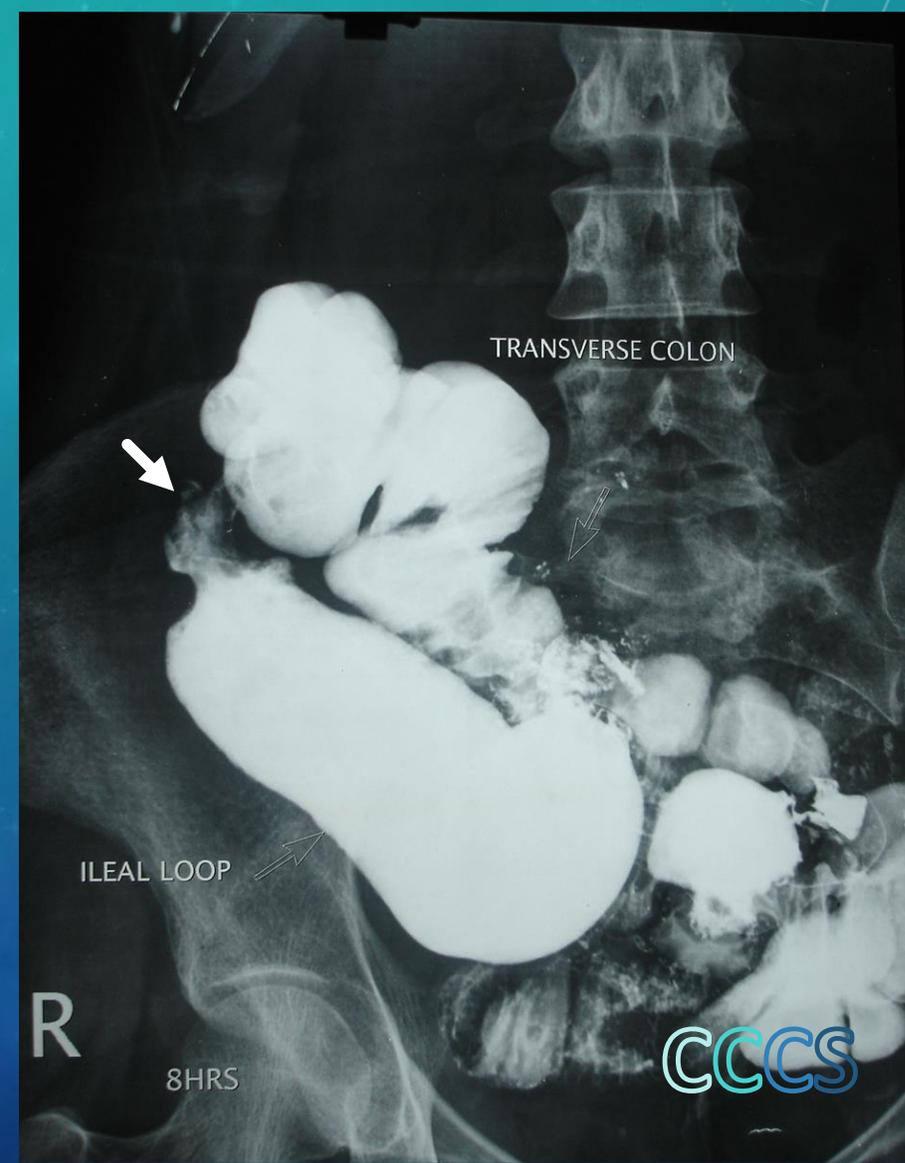


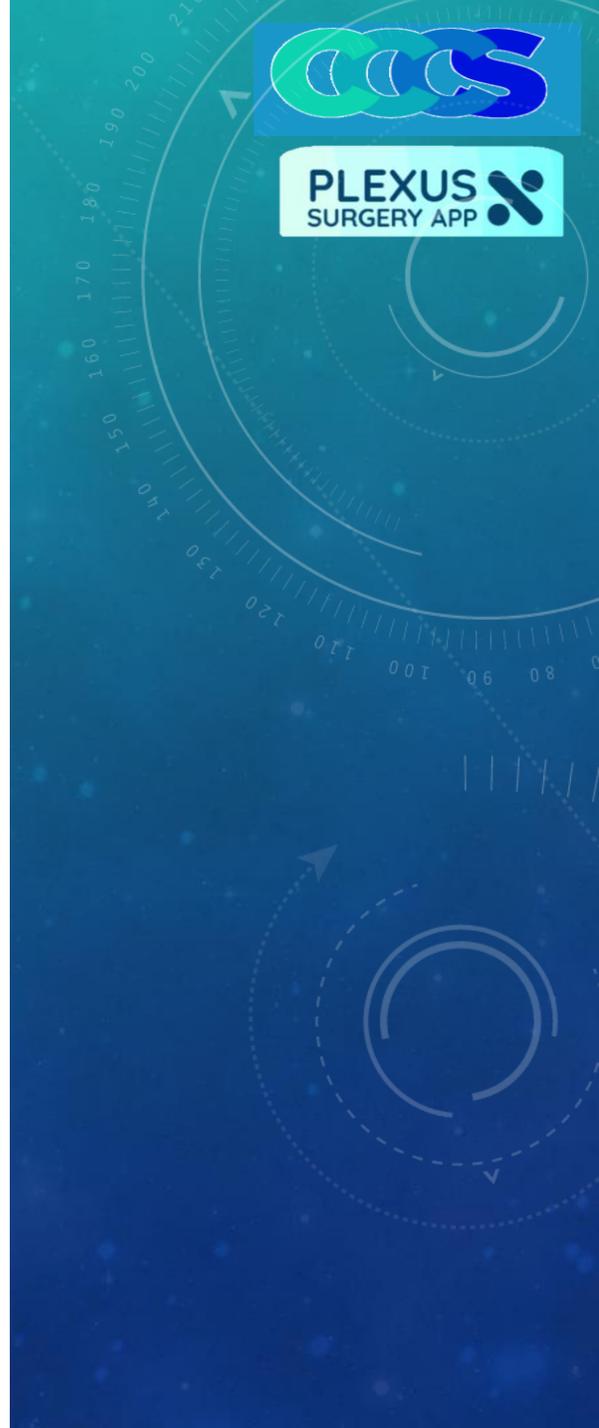
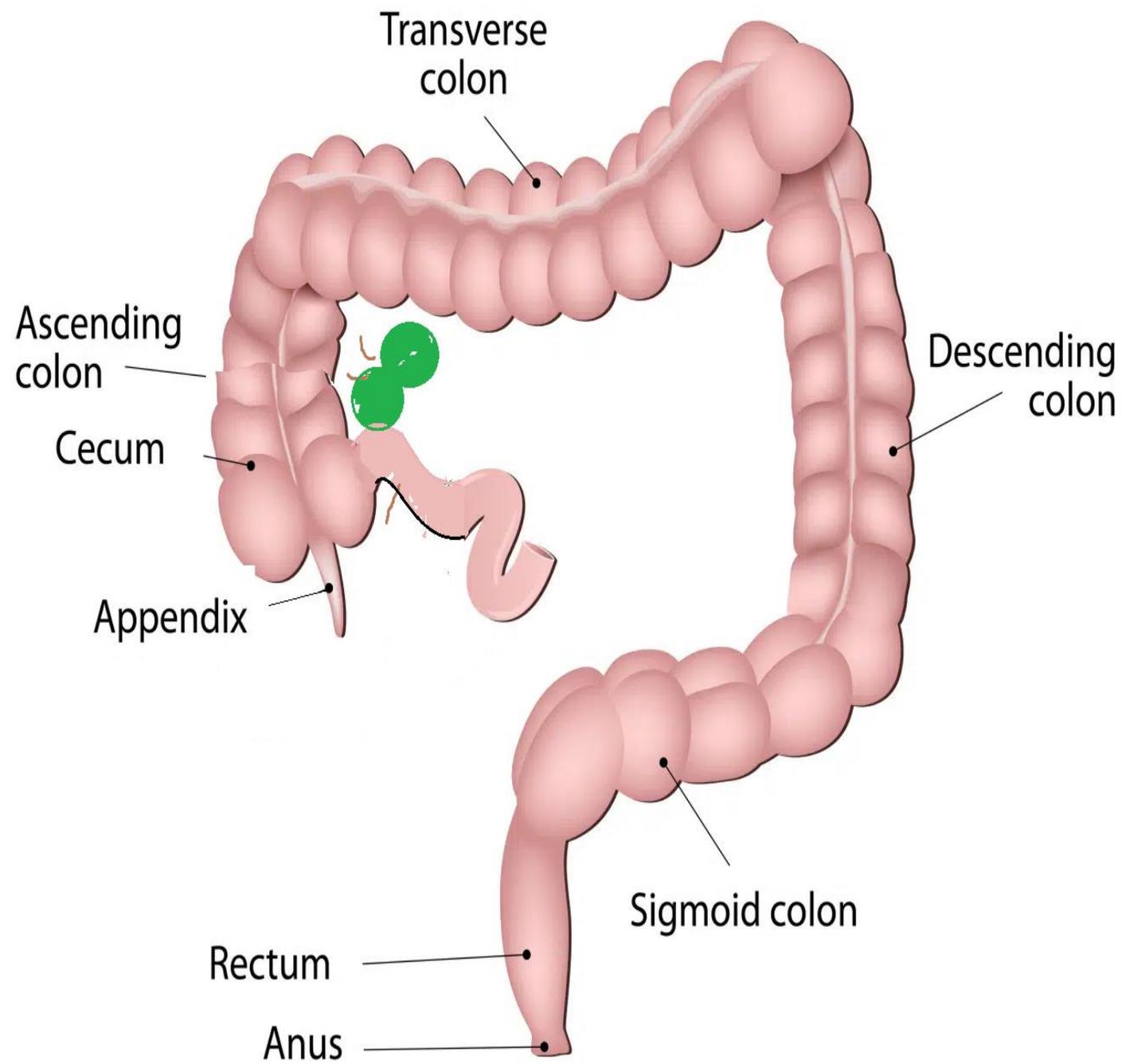
SMALL INTESTINE



TUBERCULOUS CAECUM

- Commonest area affected.
- Caecum sometimes gets pulled up into a sub-hepatic position.
- The entire ascending colon sometimes gets shortened.





TUBERCULOUS CAECUM

- Commonest area affected.
- Caecum sometimes gets pulled up into a sub-hepatic position.
- The entire ascending colon sometimes gets shortened.



From:- Bailey & Love's Short Practice of Surgery .

MR ENTEROGRAM & TUBERCULOSIS OF THE INTESTINE ILEO-CAECAL SMALL INTESTINAL



Contributed by:- Dr Soumitro Bhattacharyya; HOD Dept of Radiology; Woodlands Multispecialty Hospital

TUBERCULOUS CAECUM

- Treated with
- Limited hemicolectomy
- Right hemicolectomy
- Ileo-transverse anastomosis if adhesions are very dense.

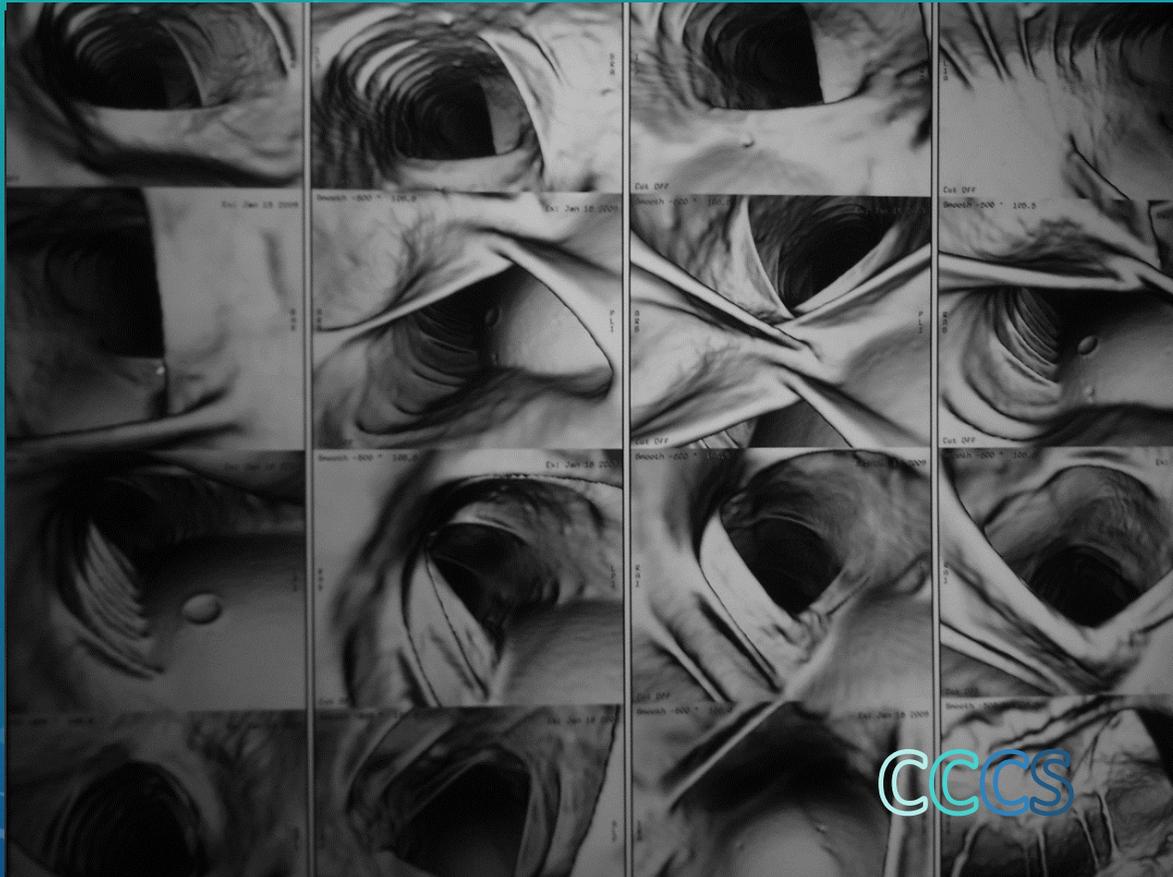
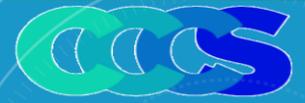
- Have always asked my urology colleague to put in a right sided D-J stent.



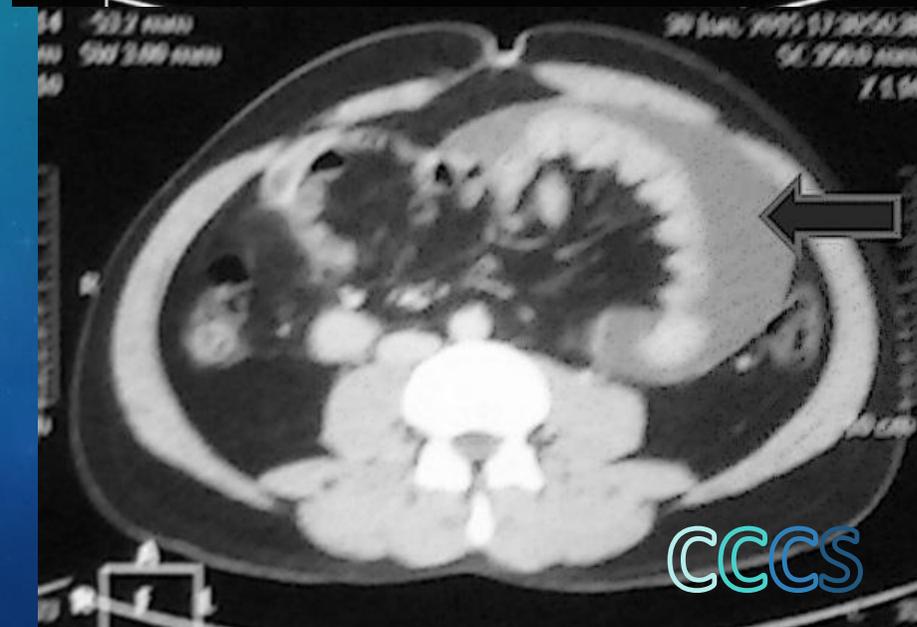
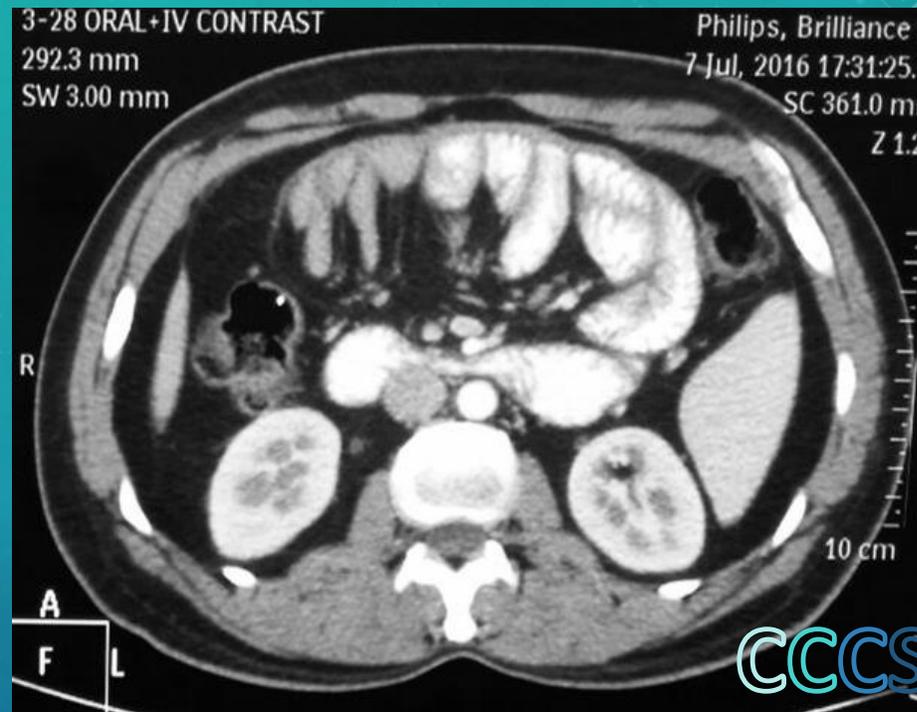
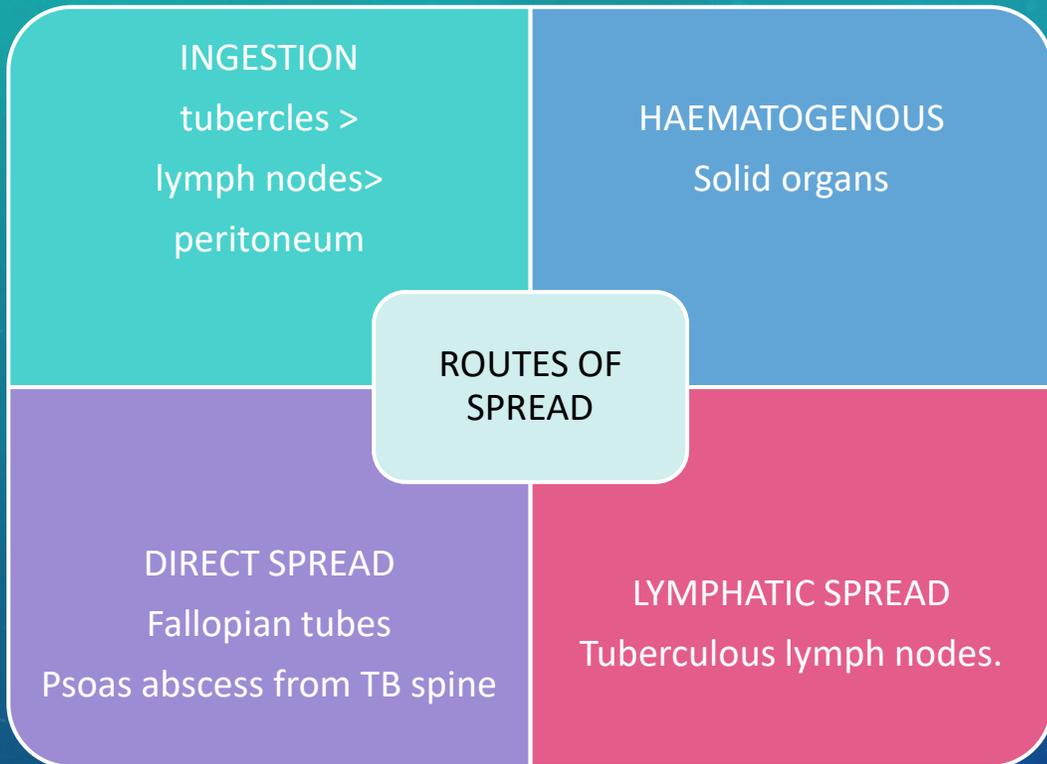
TUBERCULAR COLITIS - DIFFERENTIATING



TUBERCULAR COLITIS - DIFFERENTIATING



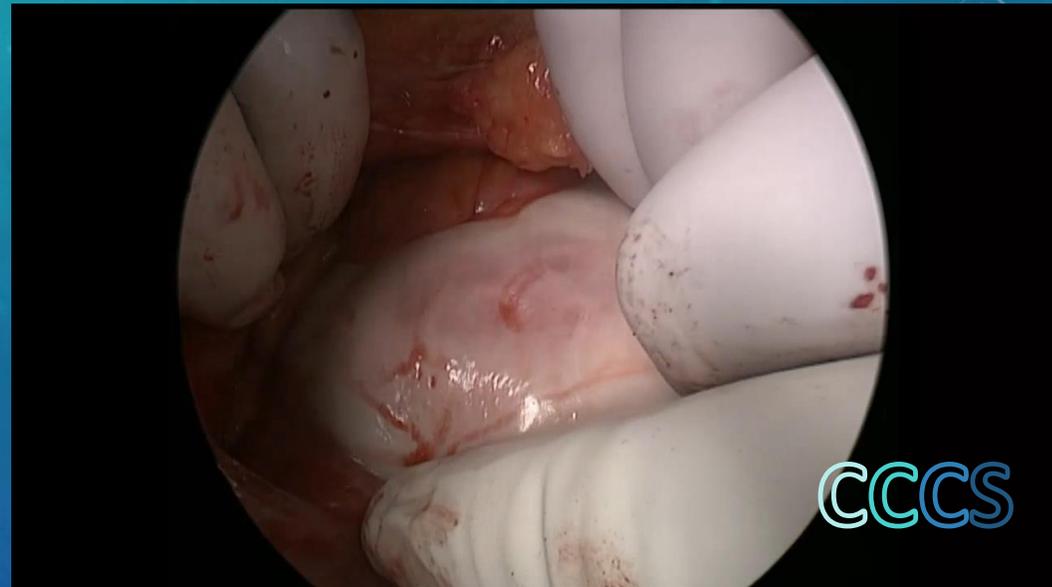
PERITONEUM



Unit of GI
Surgery;
CMRI;
Kolkata; India
Dr S De Bakshi
Dr Ajay
Mandal

PERITONEUM

- A short video of the operation for the abdominal cocoon.
- Patient had prolonged ileus but gradually recovered. Started on ATD, well on a 6 year follow-up.



PERITONEUM

- Specimen



Unit of GI
Surgery;
CMRI;
Kolkata; India
Dr S De Bakshi
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Mandal



PROBLEM OF PERITONEAL ASCITES

- Straw coloured but may be haemorrhagic.
- Lymphocytic cells 150 to 4000 cells/mcL.
- SAAG <1.1g/dL.
- Ascitic fluid nucleic acid amplification test {NAAT} (?). Cartridge based test

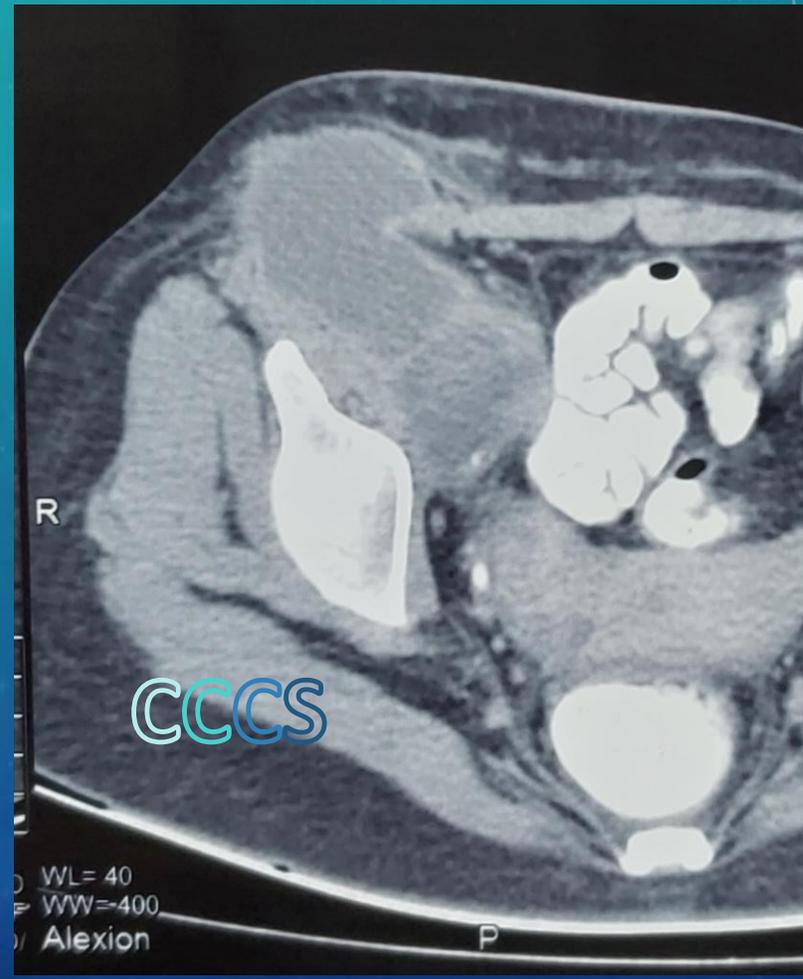
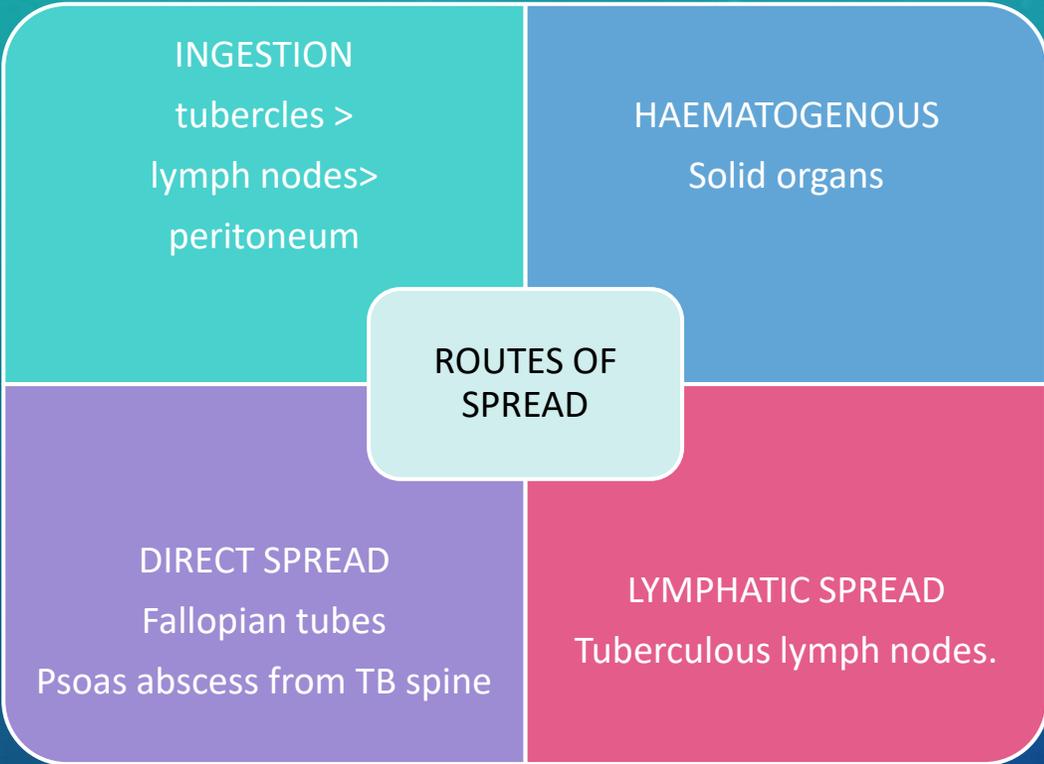
- *Chow KM et al. Tuberculous peritonitis-associated mortality is high among patients waiting for the results of mycobacterial cultures of ascitic fluid samples. Clin Infect Dis. 2002;35:409–13.*
- *Voigt MD, Kalvaria I, Trey C, Berman P, Lombard C, Kirsch RE. Diagnostic value of ascites adenosine deaminase in tuberculous peritonitis. Lancet. 1989;1:751–4.*
- *Kumabe A, Hatakeyama S, Kanda N, Yamamoto Y, Matsumura M. Utility of Ascitic Fluid Adenosine Deaminase Levels in the Diagnosis of Tuberculous Peritonitis in General Medical Practice. Can J Infect Dis Med Microbiol. 2020 Apr*



PROBLEM OF PERITONEAL ASCITES

- Direct microscopy for identification of AFB – 0%-6%.
- CA-125 elevated in many condition – non-specific.
- Ascitic ADA –reported to have a sensitivity of 100%, specificity of 96%. Recently reviewed in Japan and the critical value was 40IU/L. Positive predictive value was 53.3% -Negative PPV 100%
- *Chow KM et al. Tuberculous peritonitis-associated mortality is high among patients waiting for the results of mycobacterial cultures of ascitic fluid samples. Clin Infect Dis. 2002;35:409–13.*
- *Voigt MD, Kalvaria I, Trey C, Berman P, Lombard C, Kirsch RE. Diagnostic value of ascites adenosine deaminase in tuberculous peritonitis. Lancet. 1989;1:751–4.*
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PERITONEUM



SOLID ORGANS

- Genitourinary system most commonly involved. Followed by
- Liver,
- Spleen,
- Pancreas.



*Prof. Kalyan Kr Sarkar; MS; FRCS(Edin)
Vivekananda Institute of Medical Sciences*



PLEXUS
SURGERY APP

SOLID ORGANS

- Genitourinary system most commonly involved. Followed by
- Liver,
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- Pancreas.



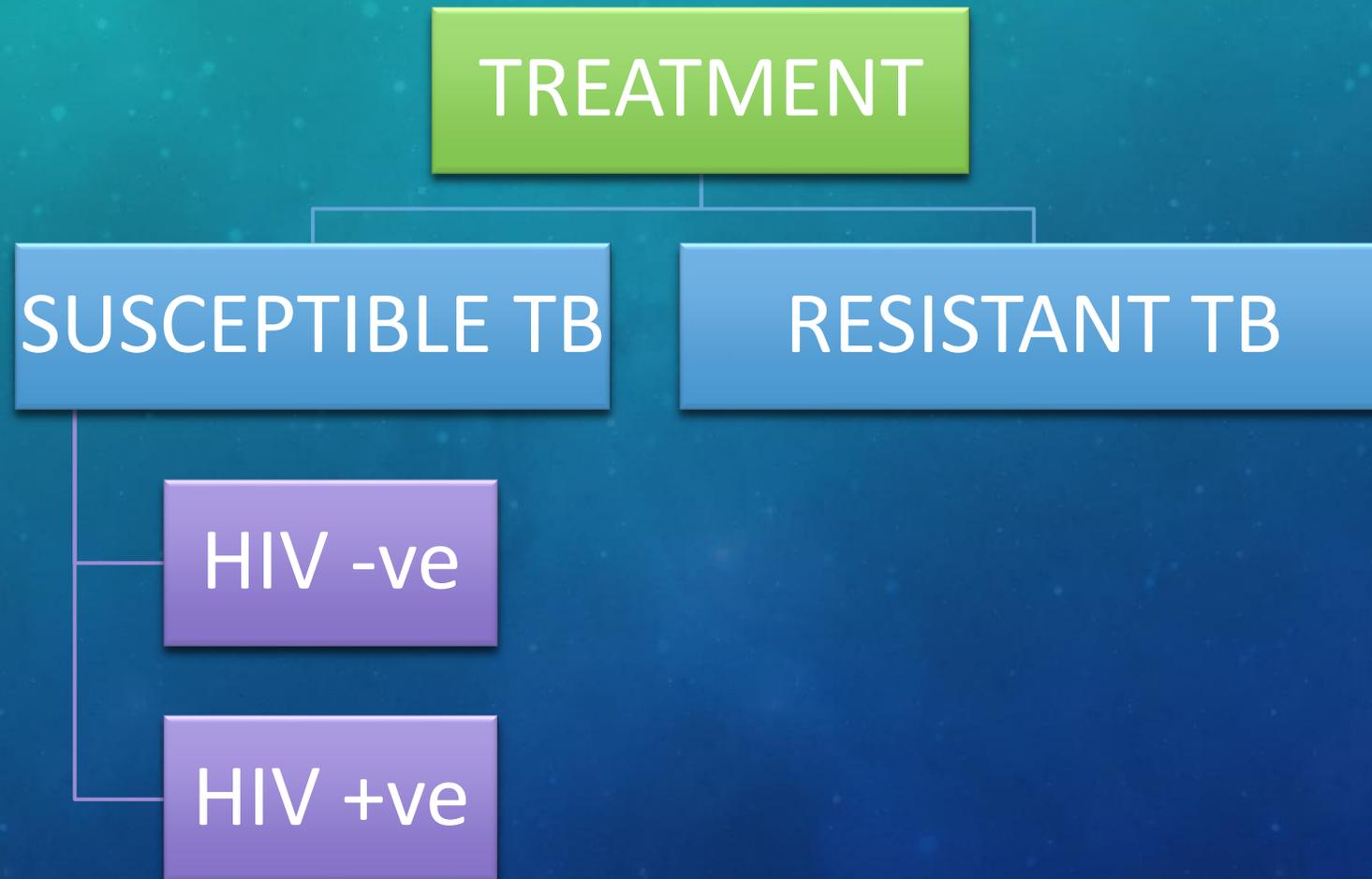
*Contributed by:-
Dr Avik Bhattacharyya
Head of Department
Dept of Radiology (Diagnostic & Interventional)
Calcutta Medical Research Institute*

SOLID ORGANS

- Genitourinary system most commonly involved. Followed by
- Liver,
- Spleen,
- Pancreas.



TREATMENT OF TUBERCULOSIS





TREATMENT OF SUSCEPTIBLE TUBERCULOSIS HIV –VE TRADITIONAL

INTENSIVE PHASE TWO MONTHS

4 DRUG REGIMEN

Isoniazid

Rifampicin

Ethambutol

Pyrazinamide

CONTINUATION PHASE 4MONTHS(+)

2 DRUG REGIMEN

Isoniazid

Rifampicin

TREATMENT OF SUSCEPTIBLE TUBERCULOSIS HIV –VE 4 MONTH

INTENSIVE PHASE TWO MONTHS

4 DRUG REGIMEN

Rifapentine

Isoniazid

Pyrazinamide

Moxifloxacin

CONTINUATION PHASE 9 WEEKS

3 DRUG REGIMEN

Rifapentine

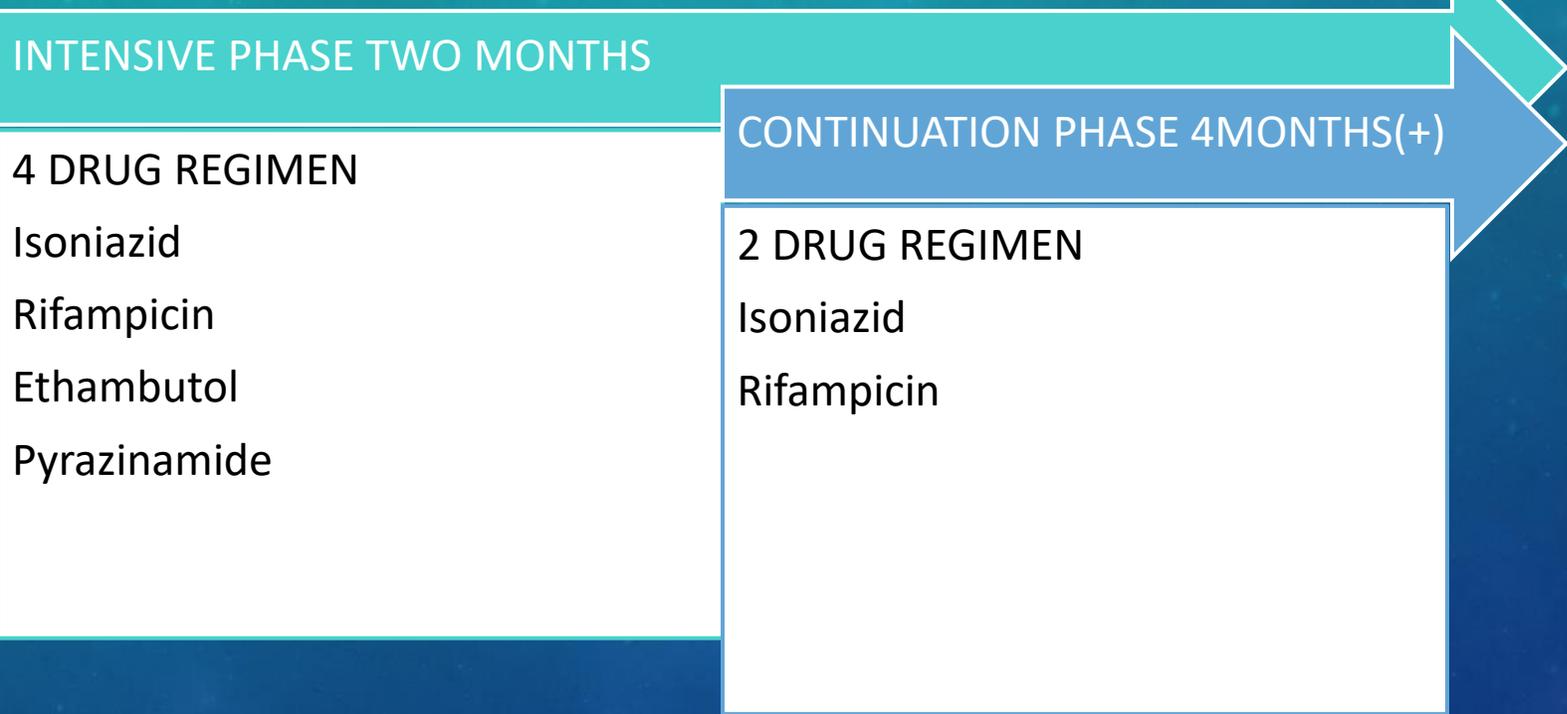
Isoniazid

Moxifloxacin

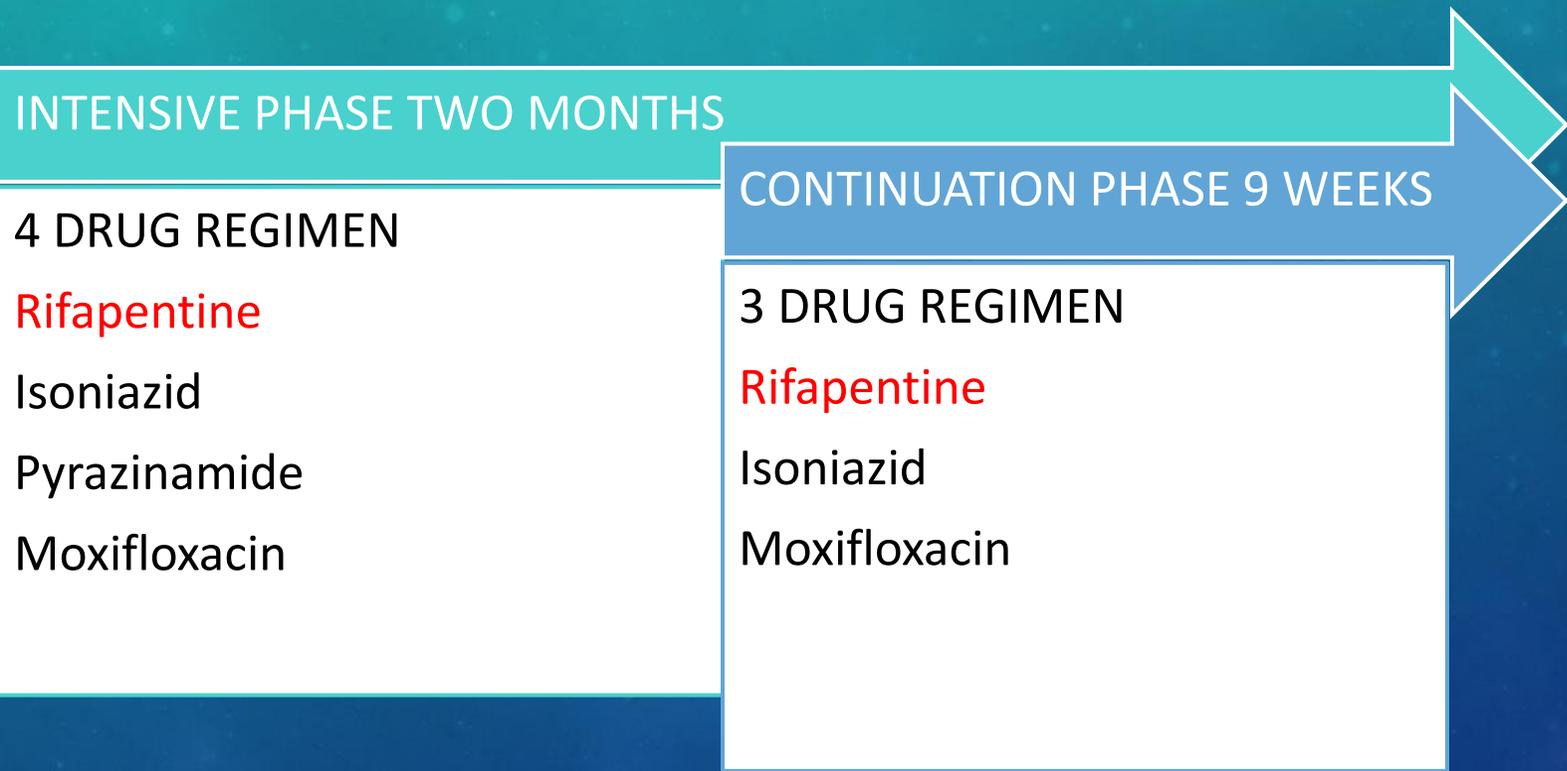




TREATMENT OF SUSCEPTIBLE TUBERCULOSIS HIV +VE TRADITIONAL



TREATMENT OF SUSCEPTIBLE TUBERCULOSIS HIV +VE 4 MONTH



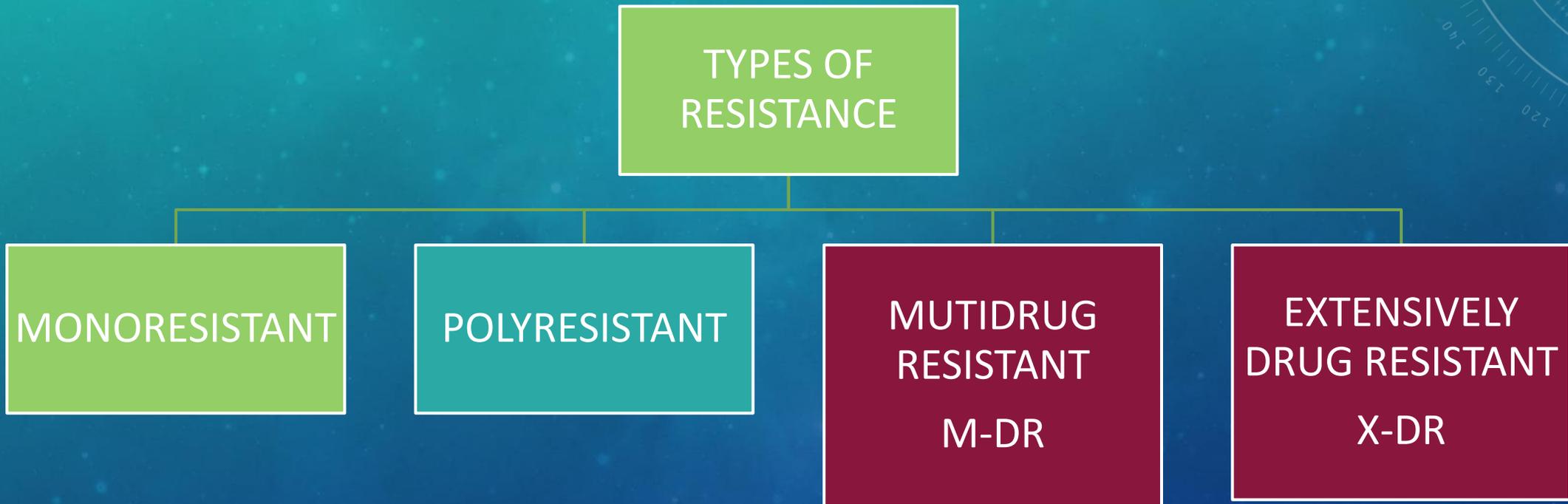
*Note:- if patient on ART
Rifapentine not compatible with integrase inhibitors or tenofir alafenamide*

TREATMENT OF RESISTANT TUBERCULOSIS

- When to suspect?
 - ✓ Previously treated TB.
 - ✓ No clinical or radiological improvement on treatment.
 - ✓ Exposure to geographical area known to have drug-resistant TB.
 - ✓ Exposure to individual with drug-resistant TB.



TREATMENT OF RESISTANT TUBERCULOSIS



TREATMENT OF MONORESITANT TB

INH RESISTANT 6 months (HIV-ve) 9 months (HIV +ve)

- Rifampicin, Ethambutol, Pyrazinamide, Levofloxacin

RIFAMPICIN RESISTANT –treat as MDR

PYRAZINAMIDE RESISTANT 9 months

- INH and Rifampicin

TREATMENT OF POLYRESISTANT TB

RESISTANT TO INH & ETHAMBUTOL 6 to 9 months

- Rifampicin, Pyrazinamide, Fluroquinolone (levo/moxi)

RESISTANT TO INH & PYRAZINAMIDE 9 to 12 months

- Rifampicin, Ethambutol, Fluroquinolones(levo/moxi)

RESISTANT TO INH, ETHAMBUTOL & PYRAZINAMIDE 9 to 12 months

- Rifampicin, Fluroquinolone, +either of (linezolid, clofazimine)



TREATMENT OF MDR & XDR TB (Drug susceptibility testing A MUST) ABBREVIATED SCHEDULE

MOXIFLOXACIN SENSITIVE OR NOT TESTED – 6 months

- Bedaquiline, Pretomanid, Linezolid, Moxifloxacin (BPaLM)

MOXIFLOXACIN RESISTANT 6months

- Bedaquiline, Pretomanid, Linezolid (BPaL)

BEDAQUILINE, PRETOMANID NOT POSSIBLE – 9 month

- Delamanid, Linezolid, Levofloxacin, Pyrazinamide

TREATMENT OF MDR & XDR TB (Drug susceptibility testing A MUST) PROLONGED TREATMENT

- INDICATIONS:-
- Miliary, meningeal, CNS disease.
- Locally extensive disease (cavity etc.).
- Immunosuppressed patients eg. HIV.
- Pregnancy.
- Short course drugs cannot be used in resistance, prior exposure, allergy, toxicity.





TREATMENT OF MDR & XDR TB (Drug susceptibility testing A MUST) PROLONGED TREATMENT

INTENSIVE TREATMENT – 4months

7 DRUG REGIMEN

- Bedaquiline
- INH high dose
- Ethambutol
- Pyrazinamide
- Fluroquinolone(Levo/Moxi)
- Ethionamide
- Clofazimine

CONTINUATION TREATMENT – 5 months

4 DRUG REGIMEN

- Ethambutol
- Pyrazinamide
- Moxifloxacin
- Clofazimine

*WHO issued a Rapid Communication in May 2022; following the WHO 2020 guidelines.
United States Centers for Disease Control and Prevention (CDC)*

ASANTE KENYA



Dr Sanjay De Bakshi

www.drsanjaydebakshi.org