

Microbiology Trainee Clinical case discussion club

Session 1: 8th February 2023, 12-1pm GMT

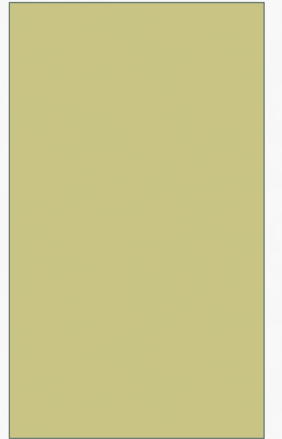
Supported by:



**The Association for
Clinical Biochemistry**
Microbiology Group

THE IMPORTANCE OF CLINICAL DETAILS

DR ELEANOR SENIOR
COUNTRESS OF CHESTER NHS TRUST



PATIENT ADMISSION

- M, 17y old
- Admitted CoCH 30/11/21 (Thursday)
- 3/7 diarrhoea (watery, no blood)
- Vomiting (no blood)
- Unable to tolerate oral fluids
- Generally achy
- Spiking temps up to 40, shivers and unable to get out of bed
- Had chicken wings at work on the Saturday prior and developed symptoms a few hours later
- No previous microbiology and normally fit and well
- Has penicillin allergy – noted as rash, anaphylaxis.

PATIENT ADMISSION (CONT)

On examination:

No abdominal pain

No cough

Hasn't eaten since Saturday

Can now (Thursday) keep down some fluids

In last 2 days has developed 'brick red' urine

No dysuria or increased frequency

WHAT FURTHER INVESTIGATIONS/INFORMATION
WOULD YOU LOOK TO OBTAIN?

MICROBIOLOGY RESULTS

- Urine = >100 WBC, No organisms seen
 - Blood culture collected 30/11
 - xB = GPCC -> (Gram positive cocci in clusters in both bottles)
 - Tube coagulase negative
-
- WBC:13.7 (4-11 is normal)
 - CRP:252 (elevated)
 - Urea:9.4 (normal = 6-24)
 - Creatinine:193 (normal = 65-119)- AKI

DIFFERENTIALS?

DIFFERENTIALS

Stated by the ward:

- Gastroenteritis
- Haematuria
- Possible Haemolytic Uremic Syndrome (HUS)
- Other differentials: *C. difficile*, bacteraemia
- Started on oral Ciprofloxacin 500mg BD then stopped as not clinically indicated

MORE MICRO RESULTS

- Blood culture- aerobic bottle: ***S. aureus***
- Uncertain significance but can also produce toxins that give food poisoning symptoms
- Would be unusual to get a bacteraemia from this via F/O route
- Blood culture-anaerobic bottle: ***S. epidermidis*** (Coagulase negative)
- *C. difficile* toxin = negative
- Enteric PCR on stool = negative.
- Sample sent to be cultured for *E. coli* 0157 and *Shigella*
- Sample sent to Colindale for *S. aureus* toxins

FURTHER RESULTS AND CLINICAL DETAILS

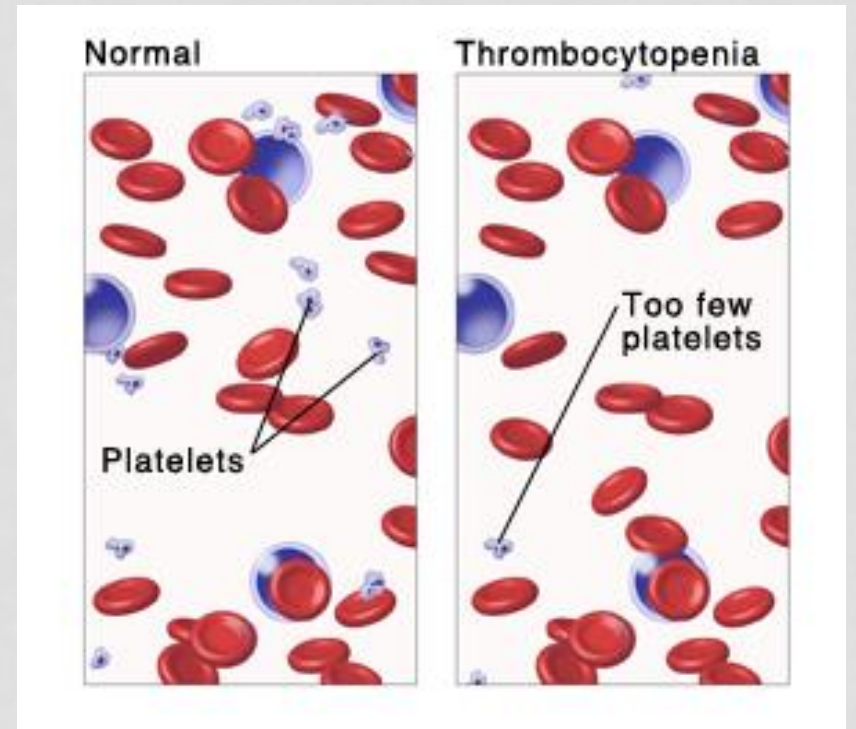
- Bloods do not indicate HUS (no haemolysis)
- No history of foreign travel
- Not immune suppressed
- No wounds
- Other people ate the chicken but aren't unwell
- Started on Linezolid 600mg BD
- 2/12 still spiking temps of 39 overnight –more BCs sent
- Watery stools and vomiting has settled

FURTHER TESTS?

FURTHER TESTS

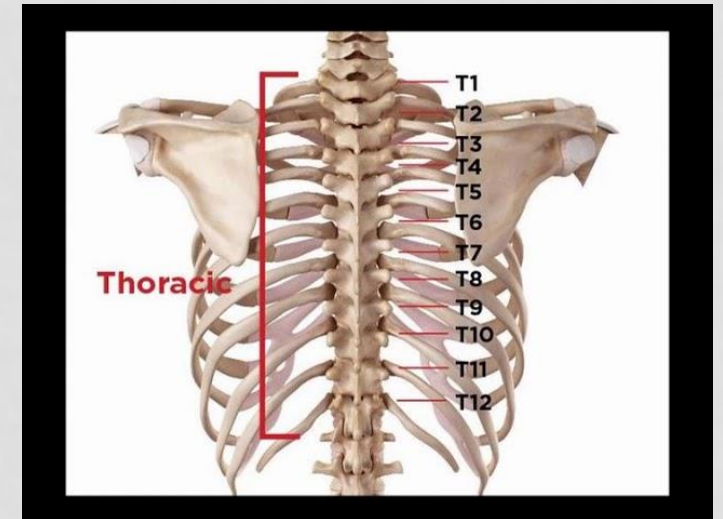
- Echo requested
- MRI if he has back pain- Still unsure if *S. aureus* is a contaminant or genuine bacteraemia
- CT thorax
- Blood film
- Serology: HIV, Hepatitis, toxoplasma, leptospirosis, chlamydia
- Urine

- 2/12 blood film-> thrombocytopenia (platelet deficiency)
- 3/12 transferred to ICU
- No organ support needed
- On ciprofloxacin and clindamycin
- Urine culture -> no growth



Thrombocytopenia. Reproduced from
<https://www.saintlukeskc.org/health-library/thrombocytopenia>

- On treatment for *S. aureus* bacteraemia
- Increasing features of post-COVID Kawasaki like syndrome (inflammatory syndrome)
- Had 1 dose of immunoglobulin
- 3/12 pt now on Clindamycin, Linezolid, Rifampicin, Meropenem and had a stat of Gentamicin
- Swollen calves and low platelets
- Back pain around T2



Thoracic spine. Reproduced from
<https://www.youtube.com/watch?v=zisulHu24ss>

IMAGING

- Imaging of lower limbs requested-Doppler- no DVT
- CT thorax-infective air space in both lungs -suggestive of bronchopneumonia.
- Minimal right pleural effusion (build up of fluid in pleural space) and bibasal atelectasis (partial lung collapse)
- Echo-global marked hypokinesia (reduced ejection fraction-heart failure)

REFERRAL

- 7/12- sent to Wythenshawe in multi-organ failure for heart support
- Treated for toxic-shock

MICRO SENT BUT RESULTS WERE OUTSTANDING FOR

- EBV and CMV PCR
- Hep A,B,C &E
- HIV
- Toxoplasmosis serology
- Leptospirosis serology and PCR
- Urine for leptospirosis serology
- Coxiella
- Chlamydia serology
- Blood cultures

FINAL DIFFERENTIALS

FINAL RESULTS

10/12 Leptospira PCR positive

UKHSA notified

Completed 7/7 Ceftriaxone and IV Clindamycin

Recommended Doxycycline stepdown 100mg BD for 14 days

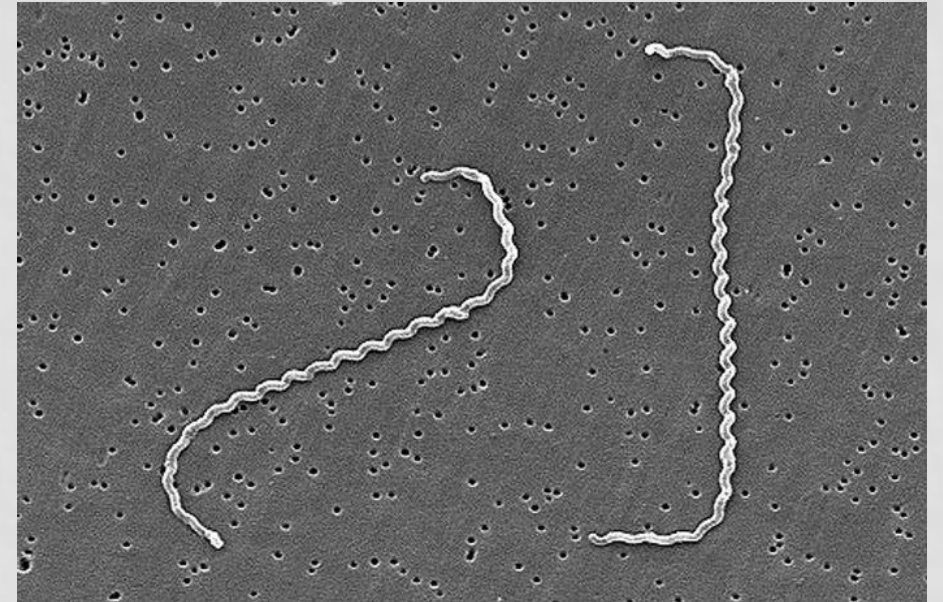
Made a full recovery

CLINICAL DETAILS NOT REVEALED UNTIL LATER

- Patient had red eyes
- Has goats and pigs at home
- Could have narrowed down the differentials

LEPTOSPIROSIS

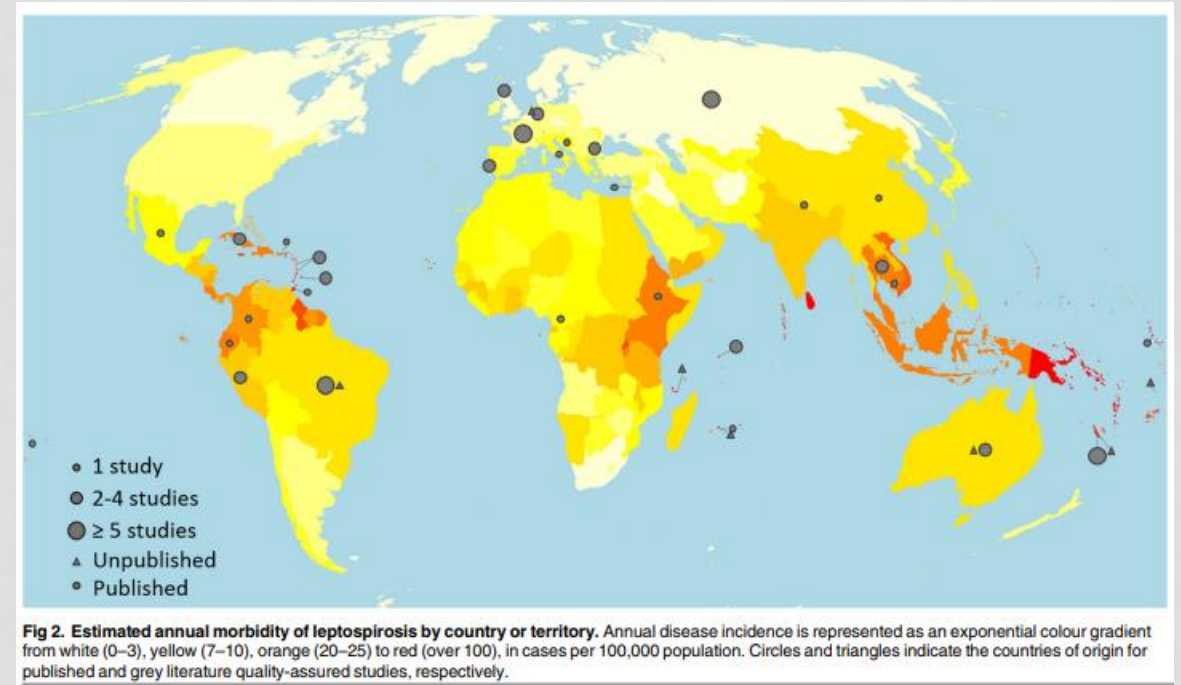
- Bacterial disease caused by *Leptospira*
- Spirochete
- Spread through the urine of **infected animals** such as rats, pigs, goats, dogs and cattle and can be spread in water
- Acquired from contact with infected water or urine
- At risk: farmers, dairy workers, vets
- Associated with outdoor water activities



Leptospira-reproduced from the
CDC Public Health Image Library
<https://phil.cdc.gov/Details.aspx?pid=1220>

LEPTOSPIROSIS

- Occurs worldwide but most common in tropical areas- associated with natural disasters, e.g. hurricanes.
- >500,000 cases worldwide
- Europe 2020 report → 565 cases from 21 countries
- Likely underreported



Estimated morbidity of *Leptospira*-reproduced from Costa et. al 2015 <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4574773/>

LEPTOSPIROSIS-SIGNS AND SYMPTOMS

- Fever
- Vomiting
- Jaundice
- Diarrhoea
- Abdominal pain
- Muscle aches
- Rash
- **Red eyes**

TABLE 79.1 The Most Common Clinical Manifestations of 208 Leptospirosis Patients in Puerto Rico

Symptoms (% of Cases)	Anicteric (106 Cases)	Icteric (102 Cases)
Fever	100	99
Myalgia	97	97
Headache	82	95
Chills	84	90
Sore throat	72	87
Nausea	71	81
Vomiting	65	75
Eye pain	54	38
Diarrhea	23	30
Oliguria	20	30
Cough	15	32
Hemoptysis	5	14
Signs (% of Cases)		
Conjunctival infection	100	98
Muscle tenderness	70	79
Hepatomegaly	60	60
Pulmonary findings	11	36
Lymphadenopathy	35	12
Petechiae, ecchymoses	4	29

Adapted from Alexander AD, Benenson AS, Byrne RJ, et al.
Leptospirosis in Puerto Rico. Zoonoses Res 1963;2:152-227.



Subconjunctival Haemorrhage in Leptospirosis-reproduced from <https://www.nejm.org/doi/full/10.1056/NEJMc2202675>

SIGNS AND SYMPTOMS

- Most cases = flu-like symptoms
- Approximately 10% people develop severe disease
- Severe disease can include:
 - Weil's syndrome: kidney and/or liver failure, meningitis, haemorrhage, myocarditis with arrhythmias
 - Meningitis
 - Pulmonary haemorrhage with respiratory failure
- Severe disease fatality = 5-15%
- Non-severe disease is likely underreported

DIFFERENTIALS

Tropical diseases

- Dengue
- Yellow fever
- Viral haemorrhagic fevers
- Malaria

Other differentials

- Food poisoning
- Chemical poisoning
- Viral hepatitis
- HIV seroconversion
- Toxoplasmosis
- Brucellosis
- Legionnaires
- Typhoid fever

REFERENCES

- <https://www.cdc.gov/leptospirosis/index.html#:~:text=Leptospirosis%20is%20a%20bacterial%20disease,have%20no%20symptoms%20at%20all.>
- <https://www.ecdc.europa.eu/en/publications-data/leptospirosis-annual-epidemiological-report-2020>
- <https://www.paho.org/en/topics/leptospirosis#:~:text=Leptospirosis%20occurs%20worldwide%20but%20is,after%20heavy%20rainfall%20or%20flooding>
- <https://www.nejm.org/doi/full/10.1056/NEJMicm2202675>
- https://www.cdc.gov/leptospirosis/health_care_workers/index.html
- <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4574773/>
- <https://www.sciencedirect.com/science/article/pii/B978032355512800079X#f0010>
- <https://phil.cdc.gov/Details.aspx?pid=1220>
- <https://www.youtube.com/watch?v=zisulHu24ss>

Microbiology trainee case discussion club

Alice Goring
8th February 2023





Clinical presentation

- 26YO male who presented to ED after having a seizure
- Admitted on 22.01.23, after having further seizures in ED
- Abdomen was soft, non-tender
- No sensitivity to light
- CRP 2, WBC 17, Eosinophils 1.36



Past medical history

- Normally fit and well
- Dry cough for last 3-4 days
- No history of epilepsy
- Non-painful lumps on his head, abdomen and thigh (for 6 months)

Questions:

Where?

What?

Who?

How?



Social history

- Born and lived in Haryana (Northern India) until 1 year ago
- Helped out on family farm with cows and buffalo
- Unable to swim and no recollection of ever paddling in water
- No additional travel history – currently studying in England
- Living with brother who has lived in UK for 15 years
- No unwell family members



Differential
diagnosis?



CT brain



- Parenchyma oedema
- Multiple lesions

Further tests

MRI brain

BBV screen

TB IGRA

Toxoplasmosis and cysticercosis serology

Stool OCP

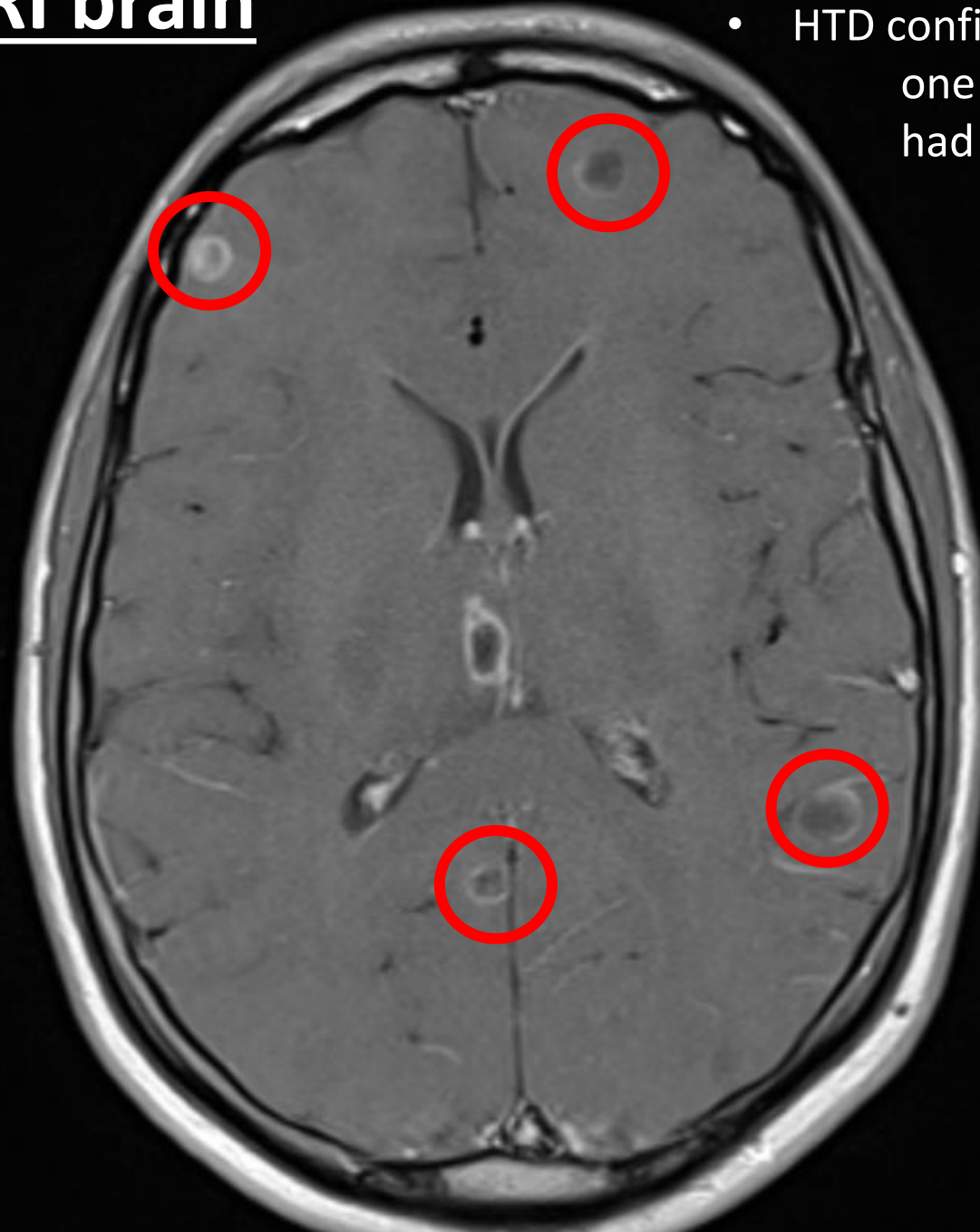
Strongyloidiasis serology

Blood culture

Fundoscopy before treatment to exclude ocular disease

MRI brain

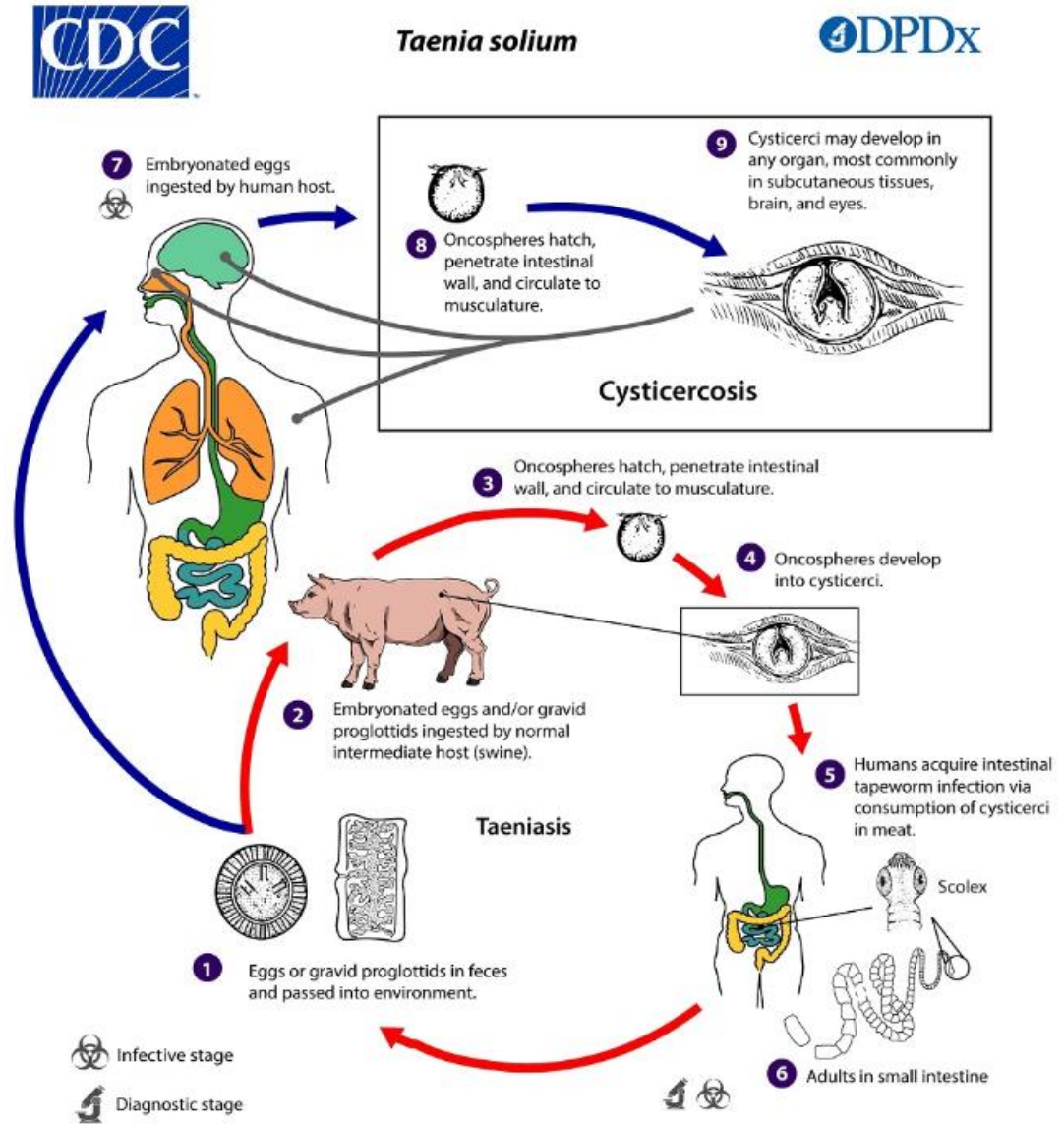
- Multiple lesions
- HTD confirmed
one lesion
had scolex



Differential
diagnosis?



Working diagnosis: cysticercosis and ?TB





Results so far.....

- HIV negative
- Hep A / B / C negative
- Toxoplasma antibody negative
- No visible cysts in thigh X-rays
- CT CAP showed pulmonary nodular opacities
- TB IGRA negative
- Ova, cysts and parasites in stool
- Confirmed cysticercosis

Treatment

Treatment started after confirmation of cysticercosis ~ 5 days

Six doses of Colecalciferol due to low vitamin D

Levetiracetam and then Lacosomide (100mg daily) for seizures

Steroids started once TB is ruled out

Double treatment of praziquantel and albendazole, starting a few days later

Prognosis

- Patient responding to treatment well
- Steroids have made him feel better quickly
- Moved to Southampton, where there is a neurosurgical ward for further monitoring as advised by HTD
- Will need months of treatment
- MRI spine needed to exclude lesions on the spinal cord



THANK YOU
for listening!

Name: [REDACTED] Hosp.No: [REDACTED] Sex: M DoB: [REDACTED] Age: [REDACTED] Clinician: [REDACTED] Source: Diagnostic Treatment
Sample: Bronchial washings Site: RLL Test: R RBF RBF1
Dated: 26/01/2023 16:25 Therapy: Clinical Details: Bronchial washing for TB PCR [REDACTED]

Status: Incomplete

Flags

Demographics: Verified

pF Sputum Appearance .
pF .
aF Routine Respiratory Culture + Commensals
nF Clinical Comment
nF Comment
pF Lab text 27/01/23 Three week SAB slopes incubated in CL3 as
pF requested by [REDACTED]
pF 29/01/23 BAL wet film- several motile ciliated
pF epithelial cells seen ... ??? Lophomonas
pF blattarum???

BAL sample

? Any ideas ?

