

CENTRAL NERVOUS SYSTEM CASES

- Interactive session



DiPS
Dansk Infektionspædiatrisk Selskab

Case 1

- Six-year-old girl admitted with four days of headache, vomiting, double vision, leg pain and difficulty walking
- No fever, cough, diarrhoea or weight loss
- Previously healthy
- Vacation in Lebanon for one month. Returned home a week ago

Physical examination

- Awake, ABC stabile, GCS 15
- BP 108/64, P 77, T 36,4, sat 100%
- Normal pupils and eye movements
- No adenitis or organomegaly
- Reduced balance (the father carries her)
- Normal tendon reflexes
- No focal neurologic deficits

Investigations

1. Blood samples (infection parameters, glucose, liver counts)
2. Urine dip-stick
3. Lumbar puncture
4. Ultrasound of the abdomen
5. CT scan of the cerebrum
6. X-ray of the lungs
7. 1+2+3
8. 1+5

CT scan

Multiple cerebral and cerebellar processes with ring-enhancing lesions

No edema

No hydrocephalus

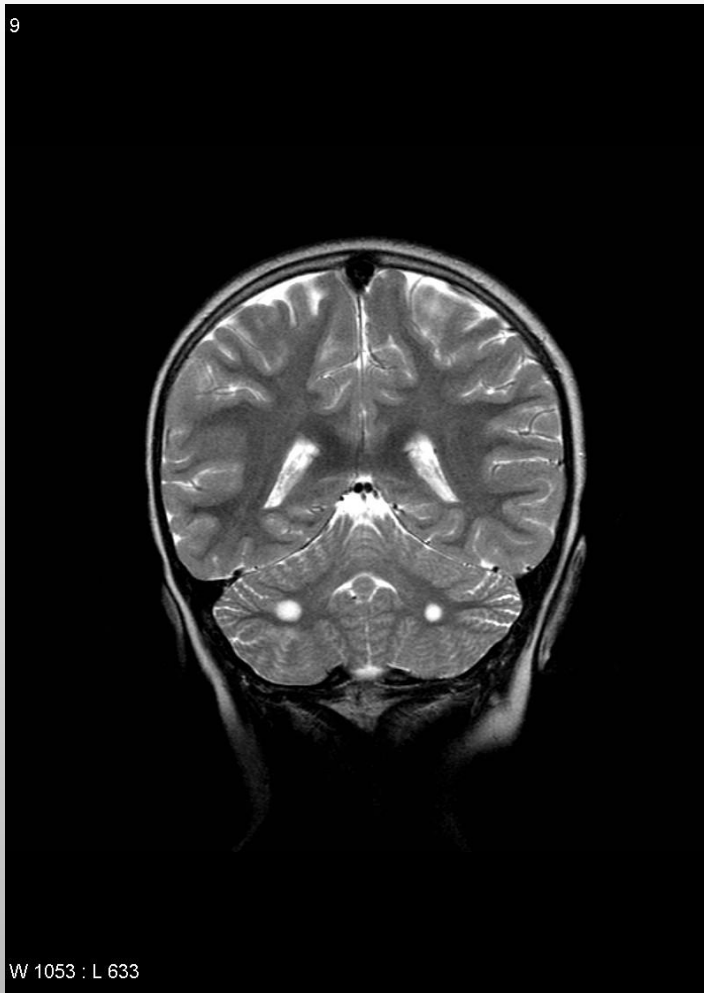


MRI

20 cystic lesions in cerebrum, cerebellum and spinal cord, some with a possible scolex in the center.



MRI



Diagnosis?

1. Neurotoxoplasmosis
2. Neurocysticercosis
3. Neurotrichinellosis
4. Neurosyphilis
5. Neuroblastoma
6. Cerebral abscesses
7. Tuberculoma



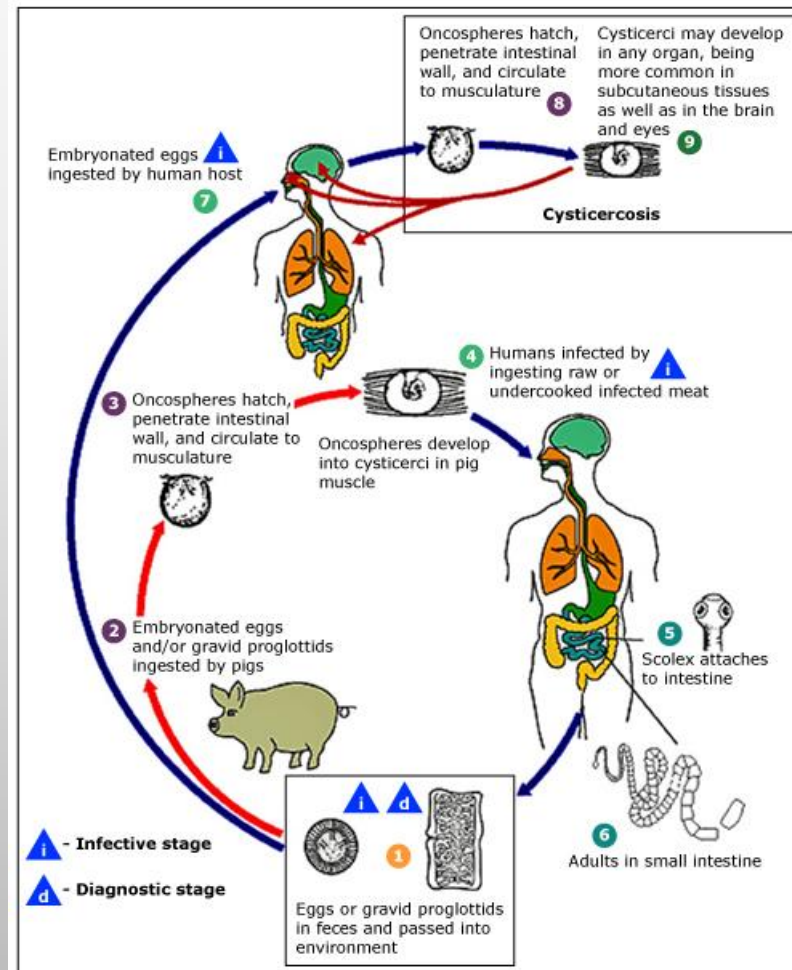
Neurocysticercosis

– how did she get it?



1. By eating undercooked beef
2. By eating undercooked pork
3. By eating undercooked chicken
4. By ingestion of eggs excreted by a tape-worm infected person

Taenia soleum life cycle



Normal test results

- Hgb, leucocytes, B-glucose
- X ray lungs
- Faeces for parasites
- CSF
- Toxocariasis, entamoeba, schistosoma, echinococcus and cysticercosis serology
- Mantoux and Qantiferone test
- Ophthalmologist exam. (apart from nystagmus)

Treatment – what would you choose?

1. Praziquantel
2. Albendazole
3. Corticosteroid
4. Surgery
5. Praziquantel + steroid
6. Albendazole + steroid
7. No treatment

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Complications

- Seizures
- Hydrocephalus
- Diffuse cerebral edema (cysticercal encephalitis):
treat ONLY with high-dose corticosteroids

Case 2

- 14-years old boy diagnosed with High Risk ALL
- Will receive intense chemotherapy
- Induced severe immunodeficiency

Prophylaxis of infections?

1. Intravenous Acyclovir if herpes zoster is suspected
2. Intravenous broad spectrum antibiotics when febrile and neutropenic
3. Amphotericin B iv x 2 weekly
4. Trimethoprim-sulfamethoxazole during weekends
5. MMR-vaccination if non-immune
6. Influenza (TIV) vaccination yearly
7. 1+2+3+4+6
8. 1+2

Now 15 years old

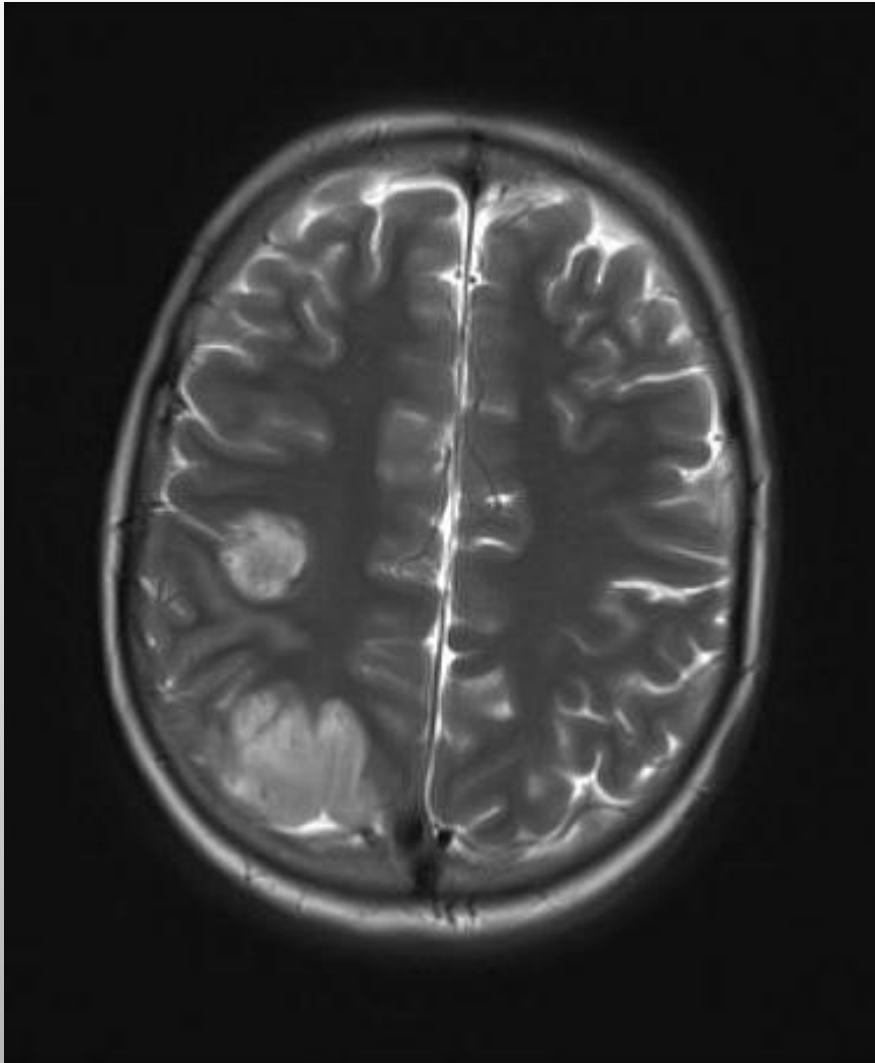
- Ninth and last intensive chemotherapy received three weeks earlier
- Develops febrile neutropeni
- Meropenem 10 days, afebrile
- CRP 2, platelets 11, granulocytopenia

- Develops severe headache, blurred vision and lack of control of left arm

Next step?

1. Eye examination
2. EEG
3. Spinal tap
4. MRI of cerebrum
5. Blood investigation

MRI of cerebrum



- One temporo-occipital focal lesion
- One parietal lesion

- Thick irregular wall of the masses

Your suggestion of diagnosis?

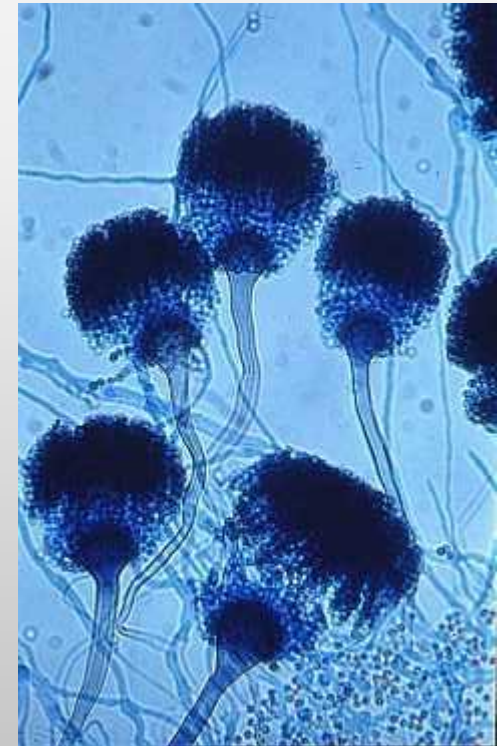
1. Tuberculomas
2. Pneumocysts
3. Brain tumor
4. Pyogenic abcess
5. Aspergilloma
6. Haemorrhagia
7. Borreliosis

Further investigations

- Biopsi from tumor
- Aspergillus antigen *galactomanna*
- Quantiferon-test negative

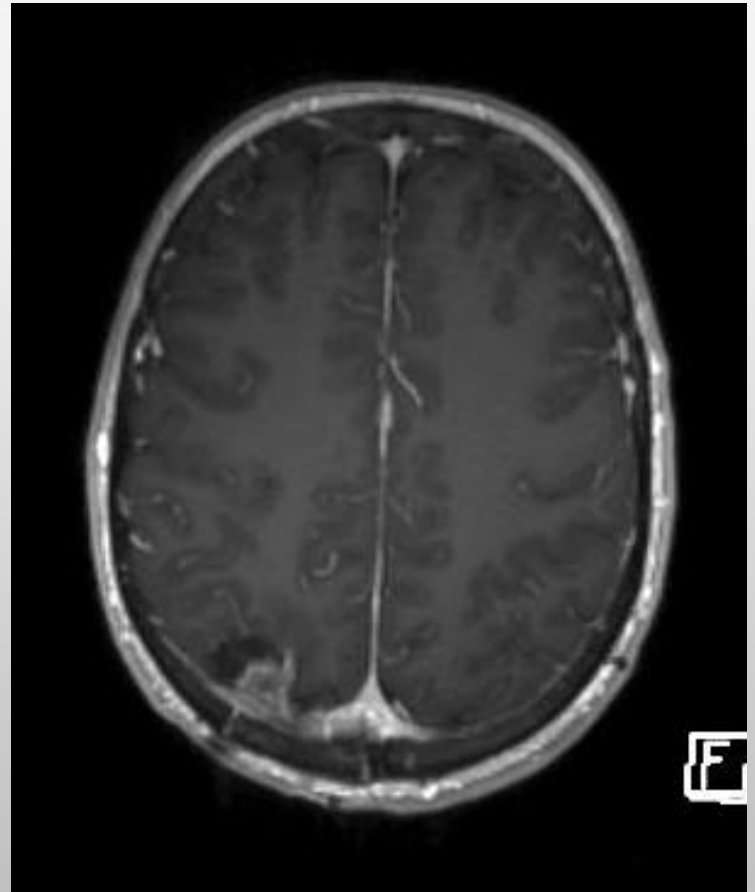
Aspergilloma of the brain – Treatment?

1. Fluconazole iv
2. Long term Voriconazole treatment
3. Steroids
4. Liposomal Ambizone iv
5. Neurosurgical removal of abcess
6. Broad spectrum antibiotics iv
7. Monitoring of S-Voriconazol level
8. 2+5+7



Follow-up one year after presentation

- Regression of symptoms/tumor on anti-fungal treatment
- Surgical removal of Aspergillus abscesses, granulomas, and focally infarcted brain
- Started high-school



Case 3

- Seven days old baby girl
- Uncomplicated pregnancy and delivery at term
- Apathy, feeding problems, afebrile
- Exposure: Father and brother had gastroenteritis one week earlier
- CRP < 10
- Spinal tap: no leucocytosis
- Ampicillin + gentamycin + acyclovir

Develops focal convulsions

- Attacks last 20 seconds; glaze, cries afterwards
- Spinal fluid: 55000 erythrocytes/ 109 leukocytes, spinal glucose 2.0; protein 4.28

Suggestion of the pathogen found in the spinal fluid?

1. Herpes simplex virus
2. E.coli
3. Enterovirus
4. Group B Streptococci
5. Varicella Zoster Virus
6. Listeria
7. RSV

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MRI-Cerebrum



MR-venografi:
Sinus trombozes in
anterior 2/3 of sinus
sagittalis superior,
left sinus
transversus and
sigmoideus

Re-admitted four weeks old

- More tired, does not wake up for meals
- Vomiting and regurgitations, not always related to meals
- Only feeds 5 minutes at a time
- Tachypnea and "head-bobbing" during meals
- St.c: murmur, strenght 2-3; max. at apex in MCL and lateral projection
- No enlargement of liver
- No fever

Further investigations?

1. New spinal tap
2. Anterior fontanelle ultrasound
3. Ultrasonic examination for pylorostenosis
4. Echocardiogram
5. Blood investigations
6. X-ray of the lungs
7. All of above

Echocardiogram

- Dilated left atrium
- Mitral valve insufficiency, grade 2-3
- Left Ventricular Ejection Fraction: 25%

What caused the cardiac problems?

1. Congenital structural cardiac disease
2. Pneumonia
3. Myocarditis
4. Liver disease
5. Endocarditis
6. Gastroenteritis

Myocarditis

- Enterovirus-related inflammatory myocarditis
- Dilated cardiomyopathy
- Secondary mitral valve insufficiency

Treatment?

1. Aciclovir
2. Life-long penicillin
3. Corticosteroids
4. Acetylsalicylic acid
5. Furosemide and Spironolactone
6. Captopril
7. 2 + 3
8. 5 + 6

Follow-up six months old

Cardiac control:

- No symptoms of cardiac incompensation
- ECHO: Normal LEVF; persistence of small dilatation of LA and LV

MRI of cerebrum: normal flow in sinus sagittalis, transversus and rectus

Developmental delay

- THANK YOU!

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