



CEREBRAL TB AND OTHER
CHRONIC CEREBRAL BACTERIAL
INFECTION



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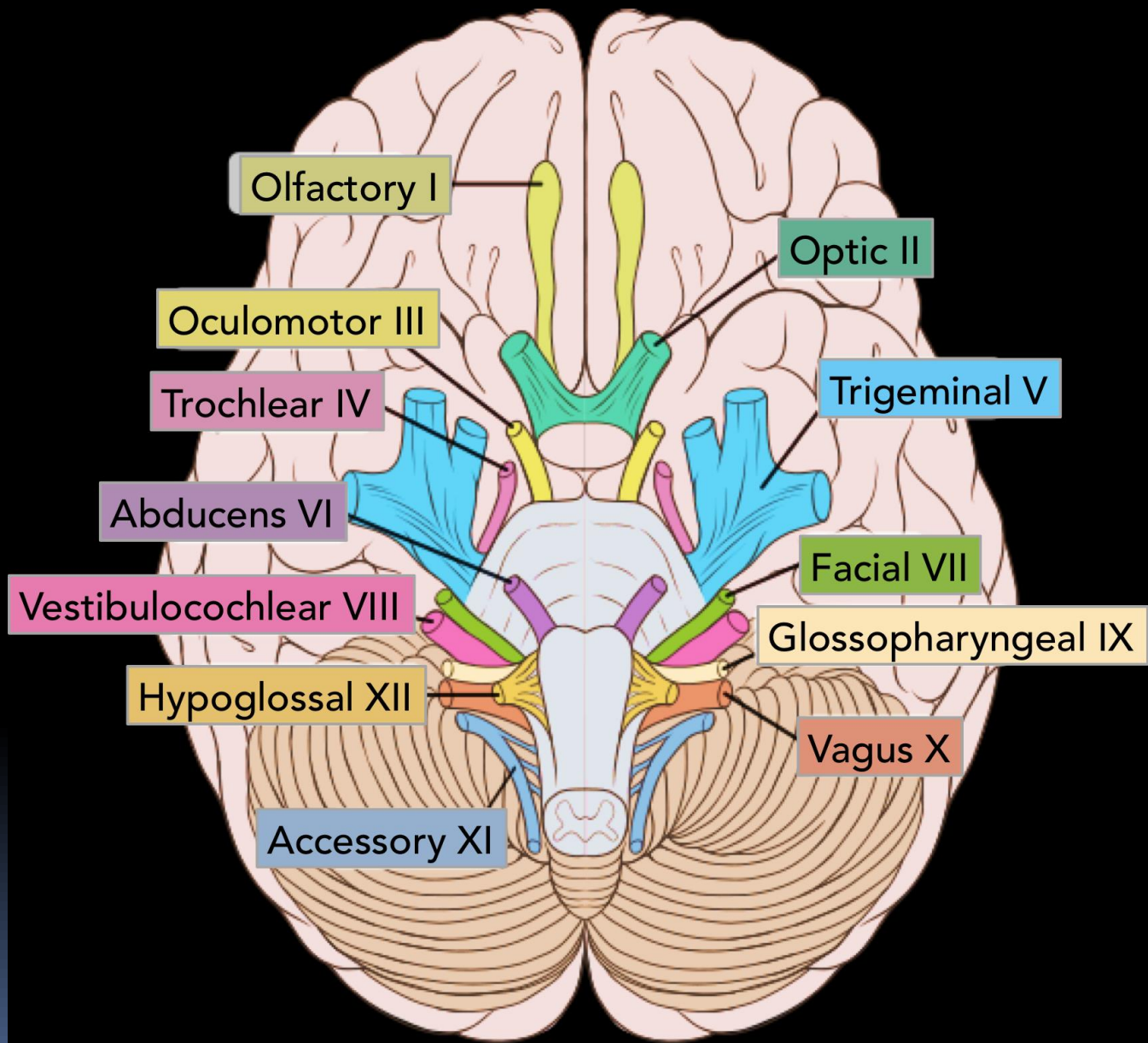
Symptoms and signs of chronic cerebral and meningeal infection: overlong period or can be recurrent

SYMPTOM

- ❖ Chronic head ache
- ❖ Neck or back pain
- ❖ Change in personality
- ❖ Facial weakness
- ❖ Double vision ,visual loss
- ❖ Arm and leg weakness
- ❖ clumsiness

SIGN

- ❖ +/- Papilloedema
- ❖ Brudzinski or Kerning 'positive sign of meningeal irritation
- ❖ Altered mental status, memory loss, etc
- ❖ Seventh nerve palsy
- ❖ 3,4,6 th,Nerve palsy
- ❖ Ataxia
- ❖ Hydrocephalus



Microbiological Causes Of Chronic Cerebral Infection And Meningitis

A. Bacterial, Most important

- a) Tuberculosis } in Saudi Arabia
- b) Brucellosis } }
- c) Partially treated acute meningitis
- d) Syphilis-caused by *Treponema Pallidium*
- e) Liptosporosis- caused by *L. interrogans*
- f) Lyme disease-caused by *Borrelia burgdorferi* not common in Saudi Arabia
- g) Nocardiosis-caused by *Nocardia* species e. g. *N. Asteroids*
- h) Cerebral abscesses can also same presentation as chronic infection

B. Fungal Causes

- a) *Cryptococcus neoformans*
- b) *Candida* species in Saudi Arabia species mainly *Candida albicans* in immunocompromised patients
- c) *Aspergillus* species
- d) *Histoplasma capsulatum*

C. Parasitic

- a) *Toxoplasma gonodii* (most common)
- b) Trypanosomiasis: caused by
 - a) *Trypanosoma brucei gambiense* and *Trypanosoma brucei rhodesiense*
 - b) *Trypanosoma cruzi*
 - c) Rare causes *Acanthamoeba* spp



D. Virus

Some virus can some present as chronic meningitis these include:

- a) Mumps
 - b) Herpes simplex
 - c) HIV
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The most important causes of chronic bacterial cerebral and menigeitic infection in Saudi Arabia are:

1. Tuberculosis
2. Brucellosis

They should be differentiated on the basis of:

- a) Clinical History
- b) Occupations
- c) Clinical symptoms
- d) Clinical signs in other organism
- e) Cerebrospinal fluid findings

Brucellosis

- ❖ Is common disease in Saudi Arabia
- ❖ It affect people who are in contact with domestic animals or those who consume raw milk and milk products
- ❖ It usually presents with Pyrexia(fever) of unknown organism of intermittent nature
- ❖ The fever is accompanied by night sweating, in between the attacks of fever the patient is not very ill.
- ❖ Same reasons it can caused chronic cerebral infection and meningitis
- ❖ The commonest causes in Saudi Arabia is *Br. melitensis*

Tuberculosis

- ❖ Is caused by *Mycobacterium tuberculosis*
- ❖ Which infect one third of human race
- ❖ The patient usually presents with fever of long duration
- ❖ Symptoms of cough and coughing of blood (Haemoptoysis) when the chest is affected
- ❖ It some cases present as meningitis and cerebral infection presenting chronic neurological symptoms and signs

Chronic cerebral and meningeal infection can produce:~

- a) Neurological disability and, may be
- b) Fatal if not treated

They usually have:~

- a) Slow insidious on set
- b) with progression of signs and symptoms over a period of weeks

They differ from those of acute infection which have

- a) Rapid on set of symptoms and signs

They are usually diagnosed ,if the neurological syndrome exists for
> 4 weeks

Diagnosis of chronic cerebral and meningeal infections

- a) History as mentioned for Brucellosis and Tuberculosis if
- b) Clinical examination
- c) Imaging by x-ray or MRI or ultrasound
- d) Laboratory findings

Laboratory Findings

This is mainly related to the laboratory examination of cerebrospinal fluid including:-

a) Collect of 2~5 ml of CSF and checking for the pressure

b) Bio chemical investigation for :

1. Total protein

2. Glucose level in comparison to the serum glucose level

a) **Microscopy:**

1. Presence of organism

2. Total white cell count

3. Differential count mainly for:-

a) Polymorphic

b) Lymphocytes

As in acute pyogenic infections, in chronic cerebral and meningeal infections the following CSF finding will be as follows

- a) Increased CSF pressure indicating increased intra cranial pressure
- b) Increased protein level due to presence of inflammatory substance, dead organism, protein and WBC
- c) Reduced glucose level (Normally is 2/3 of serum glucose level)
- d) Increased local white cell count but in chronic infection the differential shows lymphocytosis while in acute infections there is increased % of polymorph
- e) Gram stain can same time rarely shows causative organism
- f) Z~N Stain can show AFB of T.B while modified Z~N can show Nocardia

Diagnosis continued

- g) VDRL and other serological causes for syphilis
- h) Wet preparation of CSF for fungal and parasite
- i) India ink for *Cryptococcus neoformans*
- j) Culture for CSF for *Brucella*, T.B
Mycobacterium tuberculosis LJ media ,
Leplospira other Bacteria
- k) PCR or other molecular biology test for presence of bacterial element
- l) Serology for *Brucella*

Laboratory diagnosis of cerebral and meningitic Tuberculosis and Brucellosis

- a) Chest x-ray for primary focus
- b) Mantoux test, Tuberculin skin test (TST)
- c) Quatiferon (Interferon Gamma)

Combination of these finding with clinical history
and examination finding

Treatment for cerebral and meningeal Tuberculosis and Brucellosis

Tuberculosis

4 Drugs are used there are:-

1~ Rifampicin

2~ Isonized(INH)

3~ Ethambutol

4~Pyrazinamide

for 2 month

Then,

➤ Rifampicin

➤ INH

for 4~6 month

Brucellosis Treatment

Two of the following 3 drugs

- a) Tetracycline
- b) Rifampicin
- c) Cotrimoxazole

Usually Rifampicin and Cotrimoxazole are preferred as they have good penetration power in the blood brain- barrier