



Immunology

Lecture (14)

Part 2

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Lecture 14 Part 2

HIV

This topic is considered as microbiology but are taking it in immunology to know a specific immunological importance which is the importance of CD4 T cells

Note : I'm only gonna write the additional things the dr said and are not mentioned in the slides

So you have to study both the slides and the notes

Introduction slide

HIV is a member of the retroviridae family

Which means that it synthesizes DNA from RNA (normally from DNA to RNA but here it's reversed)

It's characterized by long incubation period which is 10 yrs

Morphology :

It's capsid is icosahedral

It's an enveloped virus and usually with the envelope there is spikes

It's an RNA virus which has two single strands of RNA

Next slides /

The dr read all the components in the picture

And talked about gp120 / gp41 and together they give gp160

These are the antigens we look for when want to diagnose HIV

And look at the reverse transcriptase enzyme which synthesizes DNA from RNA

What does + sense mean ? The genetic material of the virus is mRNA

Next slide :

The dr read the slide and said that two is less virulent and less transmissible

Next slide :

Theory says that HIV was transmitted from monkeys to humans
And that we had two species of monkeys and each one carried a type of HIV

And the way it was transmitted has theories too? Is it by sexual contact or human contact ??

HISTORY :

The dr said we only talk about the important things that he need

In 1980s the first time they realized that there is HIV and it was clear to them

There was cases of low immune deficiency but it wasn't clear till 1980s
So in 1980s it was clear that there is HIV and it causes AIDS syndrome and these diseases

The dr started reading from 1981

So you have to memorize it and he talked about it :

Kaposi sarcoma is a type of cancer which is opportunistic and pneumocystis is also an opportunistic disease

So they started thinking and linking between HIV and how it causes AIDS (acquired immunodeficiency syndrome) * acquired means that the immune system is weaker than normal

So this will lead to pneumocystis and kaposi sarcoma

The next point 1982 1983 1984 are also important to memorize.

What is the difference between HIV infection and AIDS ?

Infection means the virus entered but when the cd4 T cells are destructed and the symptoms start to appear we call this AIDS

HIV 1 is found globally and HIV-2 in Africa , in Africa HIV is still found
And million deaths happened because of HIV

Transmission: the dr read the slides

Number 1 transmission for HIV was blood and blood products

The the Most common cause was : sexual transmission

Next slide : it's important to know the most one

Next slide : when HIV enters the body it's target is CD4 ,
The more drop on CD4 the more the symptoms

Next slide : how the virus enters the cells in general and specifically HIV
look at the picture

Next slide :

Primary effects :

- 1- extreme leukopenia this is because the drop in CD4 T cells
- 2- the shape of T cells will change and they will become giant
- 3- afire the CD4 cells are done the virus will attack other T cells and macrophages

Secondary effects: destruction of CD4 T cells will allow opportunistic diseases to occur as pneumocystis and kaposi sarcoma and non typical TB also mycobacterium avium complex

Next slide :

Early symptoms: the early symptoms are non recognised

Next slide : these are opportunistic disease

The dr mentioned these :

1-toxoplasmosis which comes from cats

2- cryptococcal meningitis which is caused by a funji that goes to the brain

3- CMV

4-Candidiasis which is a fungal infection and causes thrush (white)

5-MAC

6- HPV

The picture are the most common opportunistic diseases

Look at the white thrush and kaposi sarcoma and how they look

Kaposi sarcoma: necrosis of the skin which gets bigger

Diagnosis:

1- ELISA : for detection of antibodies for gp120/gp160/gp41 nas today
we also have gp24

2- Western blot : to detect Glycoproteins

We can also do pCR which takes weeks

Western blot weeks to months

ELISA 3 months

ELISA is used for screening : for testing which means that if someone don't have antibodies he is free from HIV and if he has antibodies he has the disease

The dr read the other methods for diagnosis

PCR : here we are looking for RNA

We don't try to culture the virus why ? Cause we need laboratory safety 4
And the person who is working can only work for half an hour then take a break

Tomorrow when you finish and become drs a lot of patients will travel and come back ask for medical tests to screen for many diseases one of them is HIV

And as we said we use ELISA for screening of HIV

It's acceptable but there is a problem if the exposure was in the last 3 months it will be negative

We will ask for both HIV type 1 and 2

If the test was positive we do western blot or pcr

If they were positive it means 99 % hiv

If negative not HIV

Prevention: the vaccine is under development

Do we give it after infection or before ? In the countries where there is HIV we give before

The best trial in TILAND

Treatment: anti viral agents or anti retero viral , the symptoms will be delayed

So almost life expectancy will be almost normal so we say that this is an effective therapy

In prevention we must always screen blood before transfusion

Avoid sexual transmission

HIV is found in body fluids specially seminal fluid and blood

Fe 27tmalat kbireh 2nu mawjud bl breast milk w 27timalt 2ql 2nu bl salaiva

So avoid contact of body fluids for individuals who have HIV

Is the HIV found in seminal fluid enough for infection? Yes

Physical barrier could prevent the infection

In the first 72 hours of infection if you give anti retero it will kill the virus

Does kissing transmit HIV ? Usually not

Only if there is high dose on saliva and there is an injury in the mouth of the recipient

When we are in the emergency room and there is no time to make screening for the blood before giving it to the patient do we give it without making a test ?

This was a question from a student

The dr said that all blood units that are taken from individuals are screened and ready to give to patients

And the blood we take is to replace the blood units that are given to patients

Another question about the late symptoms?

There is no specific symptoms for HIV but we will see the symptoms of opportunistic disease.