VIROLOGY DATA final

Answers to Mulitple Choice Questions - Paper 1

Instructions for candidates

The examination consists of 30 multiple choice questions, each divided into 5 different parts. Each part contains a statement which could be true or false. Each question will have at least one part which is true. For each part, you should indicate whether you think it is true (T), false (F), or don't know (DN). You must fill in the relevant square with a black pen. One mark will be given for each correct answer and one mark deducted for each incorrect answer. You will not be marked for those questions for which you have indicated "don't know".

1. Viruses

False Contain both DNA and RNA

True May have an envelope

False Have their own metabolism

True May contain enzymes for replication

False Cell wall

Comments Viruses contain either DNA or RNA but not both. Some may have an envelope. Unlike bacteria, they do not have a cell wall or their own metabolism. They may contain enzymes for replication.

2. The following are DNA viruses

True Herpesviruses

False Orthomyxoviruses

False Enteroviruses

True Hepadnaviruses

True Parvoviruses

Comments Herpesvirus and Hepadnaviruses are double stranded DNA viruses. Parvovirus is a single stranded DNA virus. Orthomyxoviruses and enteroviruses are singles stranded RNA viruses.

3. The following are RNA viruses

True Picornaviruses

False Adenoviruses

False Papillomaviruses

True Rhabdoviruses

True Rotaviruses

Comments Adenoviruses and papillomaviruses are double standed DNA viruses. Picornaviruses and rhabdoviruses are single stranded RNA viruses. Rotaviruses are double stranded RNA viruses.

4. Live attenuated vaccines are available against the following viruses

False Influenza A Virus

False Hepatitis B Virus

True Rubella Virus

True Yellow Fever Virus

True Varicella-Zoster Virus

Comments Live attenuated vaccines are available against rubella, yellow fever, and varicella-zoster viruses. Influenza A viral vaccines are either inactivated split or subunit vaccines. The vaccines in current use against hepatitis B are recombinant subunit vaccines.

5. The following antiviral agents is active against the following virus

True Lamivudine and HIV

True Lamivudine and HBV

False Amantidine and influenza B virus

True Ribavirin and RSV

True Acyclovir and HSV

Comments Lamivudine is a reverse transcriptase inhibitor active against both HIV and HBV. Amantidine is active against influenza A only. Ribavirin is active against RSV and acyclovir against HSV

6. Herpes Simplex Encephalitis

True Commonly affect the temporal lobe

False Is usually diagnosed by culture of the CSF

True May be diagnosed by PCR of the CSF

False Should be treated with IV ganciclovir

True May be diagnosed by the finding of specific antibody in the CSF

Comments Herpes Simplex Encephalitis commonly affect the temporal lobe. Culture of the CSF is usually unsuccessful. PCR of the CSF is a much better choice. A diagnosis can also be made by the detection of HSV-specific antibodies in the CSF. Herpes Simplex Encephalitis should be treated with IV acyclovir.

7. The following statements are true of Varicella-Zoster Virus

False Causes a maculopapular rash

False Respond to AZT therapy

True Remains latent in sensory ganglia following primary infection

False Recurrent episodes of Shingles usually occur

False Patients with shingles are not infectious

Comments VZV causes a vesicular rash. It does not respond to AZT as it does not possess reverse transcriptase. It remains latent in sensory ganglia following primary infection. It is rare for more than one episode of shingles to occur. Patients with shingles are infectious.

8. Cytomegalovirus (CMV)

True Primary infection is usually symptomatic

True An infectious mononucleosis-like syndrome may occur during primary infection.

True May cause severe infection in immunocompromised individuals

False Is teratogenic

False Causes Kawasaki's Disease

Comments Primary CMV infection is usually asymptomatic. Occasionally, an infectious mononucleosis-like syndrome may occur during primary infection. CMV is well known to cause severe disease in immunocompromised individuals, notably transplant recipients and patients with AIDS. Although it may cause severe congenital infection, it is not teratogenic. It attacks already formed fetal organs. It is not associated with Kawaski's disease.

9. Epstein-Barr Virus (EBV) is associated with

True Infectious Mononucleosis

True Hepatitis

True Burkitt's lymphoma

True Nasopharyngeal carcinoma

True Oral leukoplakia

Comments All the above

10. HHV-6 is associated with

False Fifth disease (erythema infectiosum)

True Roseala Infantum

False Kaposi's Sarcoma

True Infectious Mononucleosis-like illness

False Oral leukoplakia

Comments Parvovirus is associated with Fifth disease (erythema infectiosum). HHV-6 is associated with Sixth disease (Roseala Infantum) HHV-8 is associated with Kaposi's sarcoma. Rarely, in adults, primary HHV-6 infection may result in an infectious mononucleosis-like illness. EBV is associated with oral leukoplakia

11. Adenoviruses

False Are associated with genital cancers

True May cause gastroenteritis

True May cause conjunctivitis

True May cause pneumonia

False May cause warts

Comments Human papillomaviruses are associated with genital cancers. Adenoviruses type 40 and 41 are associated with gastroenteritis. Adenoviruses may also cause conjunctivitis and pneumonia. Human papillomaviruses are associated with warts.

12. Human Papillomaviruses

False HPV-6 and HPV-11 are associated with genital cancers

True HPV-16 and HPV-18 are associated with genital cancers

True Warts caused by papillomaviruses may respond to interferon therapy

False Papillomavirus infection is commonly diagnosed by viral culture

False Are associated with progressive multifocal leucoencephalopathy (PML)

Comments HPV-16 and HPV-18 are associated with genital cancers. Warts caused by papillomaviruses may respond to interferon therapy although it is rarely used. Huamn Papillomaviruses cannot be grown in cell culture. Polyomavirus JC is associated with PML.

13. Coxsackie B Virus is associated with the following

True Paralytic illness

True Myocarditis

True Bornholm's disease

True Severe congenital infection

True Meningitis

Comments All the above

14. Influenza A Virus

True May undergo antigenic shift and antigenic drift

True May cause pandemics

True Respond to rimantidine

True Respond to neuraminidase inhibitors

False Vaccination confers lifelong protection

Comments Influenza A Virus may undergo antigenic shift and antigenic drift. Antigenic shifts result in pandemics. Influenza A virus will respond to rimantidine, which is a similar compound to amantidine. It will also respond to newly available neuraminidase inhibitors. Because of constant antigenic changes, vaccination will not confer lifelong immunity; it will last for one year only.

15. Paramyxoviruses may cause 

True Croup

False Maculopapular rash

True Pneumonia

True Bronchiolitis

False Diarrhoea

Comments Paramyxoviruses most commonly cause croup. They may occasionally cause bronchiolitis and pneumonia.

16. Respiratory Syncytial Virus (RSV)

False Respond to Amantidine

True May cause bronchiolitis

True May cause croup

True May cause pneumonia

False May be prevented by vaccination

Comments RSV will not respond to amantidine. It most commonly cause bronchiolitis and pneumonia. Occasionally, it may cause croup. There is no vaccine available.

17. Parvoviruses

False Causes Roseola Infantum

True Causes Erythema Infectiousum

False Is teratogenic

True May cause abortion

True May cause aplastic crisis in persons with haemolytic anaemias

Comments Parvovirus causes erythema infectiousum. Although it may cause abortion and stillbirths, it is not teratogenic. It causes aplastic crisis in persons with haemolytic anaemias

18. Measles Virus Infection

False Causes a vesicular rash

True May cause encephalitis

False May respond to acyclovir

True May be prevented by HNIG

True May be prevented by vaccination

Comments Measles causes a maculopapular rash. It may cause encephalitis. It does not respond to acyclovir. Susceptible individuals may be protected by HNIG. A live attenuated vaccine is now given as part of universal vaccination in many countries.

19. Rubella Virus

True The rash of rubella is similar to that caused by parvo and enteroviruses

True Is teratogenic

True Congenital rubella is charaterised by eye, ear and heart defects

True Congenital rubella is diagnosed by the finding of rubella-specific antibody in the cord blood of infants

True Infants with congenital rubella poses a great infectious risk.

Comments The rash of rubella is similar to that caused by parvo and enteroviruses. It is teratogenic, the classical triad of congenital rubella consists of eye, ear and heart defects. Congenital rubella can be diagnosed by the finding of rubella-specific antibody in the cord blood of infants.Infants with congenital rubella poses a great infectious risk since they may excrete the virus for up to 1 year.

20. Human T-lymphotropic virus 1 (HTLV-1) is associated with

False Burkitt's lymphoma

True Adult T-cell lymphoma

True Tropical Spastic Paraparesis

False Multiple Sclerosis

False Hodgkin's lymphoma

Comments Human T-lymphotropic virus 1 (HTLV-1) is associated with Adult T-cell lymphoma and Tropical Spastic Paraparesis

21. HIV Infection may lead to

True Dementia

True Chronic Diarrhoea

True CMV retinitis

True Oesophageal candidiasis

True Non-Hodgkin's lymphoma

Comments All the above

22. The following may be useful for prognostic purposes in HIV-infected individuals

False HIV envelope antibody level

True HIV-p24 antigen

True CD4 count

False HIV pro-viral DNA in leucocytes

True HIV plasma RNA

Comments HIV envelope antibody remains high at a constant level throughout the period of infection and is thus of no use as a prognostic marker. HIV-p24 antigen had been widely used as a prognostic marker in the past but has now been supplanted by HIV plasma RNA (viral load). The CD4 count provides important information on the stage of the disease.

23. A chronic carrier state may occur in the following:

False Hantavirus Infection

False Hepatitis A

True Hepatitis B

True Hepatitis C

False Smallpox Infection

Comments A chronic carrier state may occur with HBV and HCV infection.

24. The following markers are usually present in a hepatitis B carrier with chronic active hepatitis

True HbeAg

True Anti-HBc IgG

False Anti-HBc IgM

True HBV-DNA

True HbsAg

Comments In patients with chronic active hepatitis, HBV replication is present and hence HBV-DNA and HbeAg. HbsAg is present. Anti-HbcIgM is normally absent although it may occasionally be detected during periods of exacerbations. Anti-HBc IgG is present.

25. The following statements are true

True Chronic HBV infection may respond to interferon therapy

True Chronic HCV infection may respond to interferon therapy

True Chronic HCV infection may respond to ribavirin therapy

True Hepatitis Delta infection may be prevented by vaccination against HBV

False Hepatitis E Infection may be prevented by vaccination

Comments Chronic HBV and HCV infection may respond to interferon therapy. Chronic HCV infection may respond to ribavirin therapy; however ribavirin is usually given with interferon. Hepatitis Delta infection may be prevented by vaccination against HBV. There is no vaccine available against HEV.

26. The following viruses can be transmitted by blood

True Hepatitis A

True HIV

True HTLV-1

True HBV

True HCV

Comments All the above viruses may be transmitted by blood

27. Regarding viral infection of the central nervous system (CNS)

True Meningitis may occur together with encephalitis

True Enteroviruses are one of the commonest causes of CNS infections in childhood

False HSV encephalitis is a postinfectious encephalomyelitis

True Measles encephalitis is a postinfectious encephalomyelitis

True The detection of antibody in the CSF is a useful diagnostic marker

Comments Meningitis usually occurs with encephalitis. Enteroviruses are one of the commonest causes of CNS infections in childhood. HSV encephalitis result from invasion of the virus rather than an allergic postinfectious event as in the case of measles. The detection of antibody in the CSF is a useful diagnostic marker

28. The following viruses are associated with gastroenteritis

True Astroviruses

True Norwalk-like viruses

False Picornviruses

True Adenoviruses

True Rotaviruses

Comments Although enteroviruses may be found in faeces, they are not associated with gastroenteritis

29. The following viruses are transmitted from animals to humans

True Rabies Virus

False Polioviruses

False CMV

True Hantaviruses

True Lassa Fever Virus

Comments Rabies may be transmitted to humans from a variety of mammals. Hantaviruses and Lassa Fever Virus may be transmitted to humans by rodents.

30. The following is true of rabies virus

False The majority of cases world-wide result from bat bites

True Infection may be prevented by active and passive immunisation

False Human Rabies vaccine is a live attenuated vaccine

True The animal reservoir differ from country to country

True May be diagnosed by serology

Comments The majority of human rabies cases world-wide result from dog bites. Infection may be prevented by active and passive immunisation. Although live attenuated vaccines are available for

vaccinating animals, inactivated vaccines are used in humans for safety reasons. May be diagnosed by serology.

Answers to Multiple Choice Questions - Paper 2

Instructions for candidates

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1. Viruses may contain

True DNA

True RNA

True Glycoprotein

True Enzymes

False Cell wall

Comments Viruses may contain either DNA, or RNA. They may contain enzymes such as polymerases, and have glycoproteins in their envelope

2. Viruses are

True Obligate intracellular parasites

False May divide by binary fission

False Have their own metabolism

True May contain enzymes for replication

True May have an envelope

Comments Unlike bacteria, viruses do not have their own metabolism and do not divide by binary fission. They are intracellular parasites and may contain enzymes for their replication. Some viruses possess a lipid envelope.

3. The following statements are true

False All viruses are sensitive to antiviral agents

True Virus infected cells may be transformed.

True Viruses may have a lipid envelope

True Viruses may produce cytopathic changes in cell culture

True Some viruses are destroyed by lipid solvents

Comments To date, only a few viruses can be treated by antiviral agents. Some viruses such as oncornaviruses can transform cells. Some may have a lipid envelope which may be destroyed by lipid solvents.

4. The following are direct detection methods

True Detection of rotavirus antigen in faecal specimens

False Single radial haemolysis (SRH)

False CMV DEAFF test

True Electron microscopy

True Polymerase chain reaction

Comments SRH is a serological assay, and the CMV DEAFF test is a rapid culture test. The rest are used to detect virus particles, antigens, and nucleic acid directly from a specimen

5. The following methods may be used for serological diagnosis

True Complement-fixation tests (CFT)

False Polymerase chain reaction (PCR)

True Single Radial Haemolysis (SRH)

False CMV DEAFF test

True Western blot

Comments PCR detects viral genomes directly. The CMV DEAFF test is a rapid culture assay. Western blot is mainly used as a serological test

6. A serological diagnosis of a primary viral infection may be made

False Detection of viral-specific IgA

False Detection of viral-specific IgD

False Detection of viral-specific IgE

True Detection of viral-specific IgM

True Seroconversion

Comments A diagnosis of a primary viral infection may be made by the detection of IgM and/or seroconversion.

7. The following are examples of viral genome detection (molecular methods)

True Southern blot

False Western blot

False RIBA (Recombinant immunoblot assay)

True Branched DNA

True Polymerase chain reaction (PCR)

Comments Southern blot, branched DNA, and PCR are viral genome detection methods. Western blot and RIBA are serological assays

8. The following statements are true

False For cytomegalovirus (CMV), the cytopathic (CPE) effect usually appears within 24-48 hours

True For some viruses, the CPE is so characteristic that so further identification is required.

True Paramyxovirus causes syncytia formation in cell culture

False A given virus always produce identical CPE in different cell cultures

True Immmunofluroescence may be used to identify a virus in cell culture

Comments It takes 1-3 weeks for CMV-specific CPE to appear. For some viruses such as herpes simplex, the CPE is so characteristic that so further identification is required.

9. Poliovirus can be typed by

False Single radial haemolysis (SRH)

False Haemagglutination inhibition test (HAI)

False DEAFF test

True Neutralization test

True Hybridization with specific nucleic acid probes

Comments Polioviruses can be typed by neutralization tests and hybridization with specific nucleic acid probes. SRH and HAI are not used. The DEAFF test is used for the isolation of CMV

10. Immunofluorescence techniques can be used to detect the following directly from the specimen.

True Chlamydia

True CMV

True Respiratory Syncytial Virus (RSV)

True Influenza virus

True Rabies virus

Comments All the above

11. The following statements are true for the haemagglutination-inhibition (HAI) test.

False Not a quantitative test

True Treatment of patient serum is necessary to remove non-specific inhibitors

True Animal blood is necessary

True Usually more specific than complement fixation tests (CFT)

True May be used for the diagnosis of rubella infection

Comments HAI is a quantitative test. It is widely used in rubella serology. It is usually more specific than CFT. Treatment of patient serum is necessary to remove non-specific inhibitors.

12. Regarding cell culture

False Viruses can only be cultured using cell lines

False The presence of cytopathic effect is the only way to detect a virus

True The neutralization test is the mainstay of identification of a poliovirus isolate

False The haemagglutination inhibition test is the mainstay of identification of a respiratory syncytial virus (RSV) isolate

False Whole blood is the specimen of choice for many common viruses

Comments Viruses may also be cultured in eggs and animals. The presence of virus may be detected by CPE as well as haemadsoption, and presence of viral particles and antigen.

13. A standard Polymerase Chain Reaction (PCR) consists of

False Denaturation, annealing, and ligation steps

True Denaturation, annealing, and extension steps

True dNTPs

True Mg++ ions

True Taq polymerase

Comments Denaturation, annealing, and ligation steps occur in LCR. PCR consists of Denaturation, annealing, and extension steps. It requires dNTP, Mg++, taq polymerase, and target-specific oligonucleotide primers.

14. Modification of a standard PCR include

True Nested PCR

False branched DNA (bDNA)

True RT-PCR (Reverse transcription PCR)

True Quantitative PCR

False 3SR (Isothermal amplification)

Comments Nested PCR, RT-PCR and quantitative PCR are modifications of the PCR protocol. bDNA and 3SR are alternative amplification techniques.

15. Safety measures for preventing PCR contamination include

True The use of uracil-N-glycosylase (UNG)

True Use of filtered pipette tips

True Separate areas for master mix, template, and PCR product operation

True Dedicated pipettes for master mix, template, and PCR products

True Ultraviolet irradiation

Comments All the above may be useful in preventing contamination of PCR.

16. The following statements are usually true

True PCR is more sensitive than branched DNA assays

False Branched DNA is more sensitive than Ligase chain reaction

True Exponential amplification occurs in PCR

True Linear amplification occurs in branched DNA

True PCR is extremely liable to contamination

Comments Exponential amplification occurs in PCR, LCR and NASBA/3SR. Therefore these techniques are extremely liable to contamination and are more sensitive than branched DNA, where linear amplification occurs.

17. Laboratory diagnosis of infectious mononucleosis include

True Detection of VCA-IgM

False Detection of VCA-IgA

False Seroconversion against EBNA

True Paul-Bunell test

True VCA IgG avidity test

Comments

Diagnosis of infectious mononucleosis is usually made by the Paul-Bunell where heterophil antibodies are detected and by the detection of EBV-IgM. VCA-IgG avidity test may be used to confirm equivocal cases. Detection of elevated titres of VCA-IgA correlates with an increased risk for nasopharyngeal carcinoma and is used as a screening test. Seroconversion against EBNA does not take place until months after the initial illness.

18. Viruses that routinely establish latent infections in human sensory ganglia include

False Epstein-Barr virus

True Herpes Simplex Virus type 1

True Varicella-Zoster Virus

True Herpes Simplex Virus type 2

False Human herpesvirus 6

Comments All the above herpesviruses can cause latent infections. However, only HSV 1+2, and VZV routinely establish latent infections in human sensory ganglia.

19. Rapid diagnosis of CMV disease include

True CMV pp65 antigenaemia

False Conventional cell culture

True DEAFF test

True Detection of CMV-DNA in blood by PCR

False Rising antibody titres

Comments Rapid diagnosis of CMV disease include CMV pp65 antigenaemia, DEAFF test, and Detection of CMV-DNA in blood by PCR.

20. The following viruses are associated with respiratory infections

False Rotaviruses

True Adenoviruses

True Influenza viruses

False HTLV-1

True RSV

Comments Rotaviruses cause diarrhoea. HTLV-1 is associated with adult T-cell leukaemia and tropical spastic paraparesis.

21. The following viruses are thought to cause gastroenteritis

False Enteroviruses

True Adenoviruses

True Norwalk-like viruses

True Astroviruses

True Rotaviruses

Comments Although enteroviruses may be found in faeces, they are not associated with gastroenteritis. The other viruses are associated with gastroenteritis.

22. The following viruses are transmitted from animals to humans

True Influenza A H5N1

False HTLV-1

True Hantaviruses

False Poliomyelitis

True Rabies

Comments Influenza A H5N1 is otherwise known as the "bird flu" It afflicted Hong Kong in late 1997 and was transmitted from poultry to humans. Hantaviruses is transmitted from rodents to humans and rabies can be transmitted from various mammals to humans.

23. A chronic carrier state may occur in the following:

False Hepatitis A

True Hepatitis B

True Hepatitis C

True Hepatitis Delta

False Hepatitis E

Comments A chronic carrier state can exist in hepatitis B, C and Delta Virus infections

24. The following viruses are transmitted by blood

False Rubella

True HIV

False Measles

True HBV

True HCV

Comments HIV, HBV and HCV are transmitted by blood. Rubella and measles are transmitted via respiratory droplets

25. The following may be useful for prognostic purposes in HIV-infected individuals

False HIV envelope antibody

True HIV-p24 antigen

True CD4 count

False CD8 count

True HIV viral load

Comments HIV envelope antibody remains high throughout the course of HIV infections and thus does not carry any prognostic value. HIV-p24 antigen had been widely used in the past as a prognostic marker but it has been superseded by HIV viral load. CD4 count plays an important role in telling us what stage the disease is at.

26. The following markers are usually present in a hepatitis B carrier with chronic active hepatitis

True HbsAg

False HbsAb

False Anti-HBc IgM

True HBV-DNA

True HbeAg

Comments In patients with chronic active hepatitis, HBV replication is present and hence HBV-DNA and HbeAg. HbsAg is present. Anti-HbcIgM is normally absent although it may occasionally be detected during periods of exacerbations.

27. Regarding viral infection of the central nervous system (CNS)

True Meningitis may occur together with encephalitis

True Enteroviruses are one of the commonest causes of CNS infections in childhood

False Electron microscopy of the cerebrospinal fluid (CSF) is a useful diagnostic test

False PCR has no role in the diagnosis of CNS infections

True The detection of antibody in the CSF is a useful diagnostic marker

Comments Meningitis usually occurs together with encephalitis. Enteroviruses are one of the commonest causes of CNS infections in childhood. Electron microscopy is too insensitive to be useful as a diagnostic test. PCR assays for HSV are now routinely used for the diagnosis of herpes simplex encephalitis. The detection of antibody in the CSF is a useful diagnostic marker

28. Regarding rash illnesses

True Varicella-zoster virus (VZV) infection may cause a vesicular rash

False The rash caused by parvovirus B19 is due to the presence of virus in the skin

False Measles is usually diagnosed by viral culture

True Herpes simplex virus (HSV) infection is usually diagnosed by viral culture

False VZV cannot be grown in cell culture

Comments Varicella-zoster virus (VZV) infection may cause a vesicular rash. The rash caused by parvovirus B19 is probably an allergic reaction due to the deposition of immune complexes. Measles is usually diagnosed by serology. Herpes simplex virus (HSV) infection is usually diagnosed by viral culture. VZV can be grown in cell culture although this is rarely used for diagnosis.

29. Rubella infection

True Can be asymptomatic

True May be indistinguishable from parvovirus B19

False Can have serious side effects when occurring in a woman in the third trimester of pregnancy

True Is usually preventable by vaccination

True May be acquired by having close contact with an infant with congenital rubella syndrome

Comments Rubella infection can be asymptomatic. It may be indistinguishable clinically from parvovirus B19 infection. The most serious effects occur when a pregnant woman is infected in the first trimester of pregnancy. It is usually preventable by vaccination. Infants with congenital rubella syndrome pose a great infectious risk since they may excrete virus in great quantities up to 1 year of age.

30. Regarding laboratory tests for rubella

True Rubella immunity may be determined by an enzyme immunoassay

False CFT is commonly used for the diagnosis of acute infection

True IgM antibody is usually detectable after the onset of rash

False Rubella virus cannot be cultured

False Pre-natal diagnosis of rubella in a foetus is simple and reliable

Comments Rubella immunity may be determined by an enzyme immunoassay. CFT is not commonly used for the diagnosis of rubella infection; Haemagglutination-inhibition tests are. IgM antibody is usually detectable after the onset of rash Rubella virus can be cultured although this is rarely used as a method of diagnosis. Pre-natal diagnosis of rubella in a foetus such as amniocentesis involve some degree of risk to the fetus.

Answers to Multiple Choice Questions - Paper 3

Instructions for candidates

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1. The following are DNA viruses

False Influenza A virus

False Rubella Virus

True Hepatitis B Virus

True CMV Virus

True Parvovirus

Influenza A virus and Rubella Virus are RNA viruses. CMV Virus and Hepatitis B Virus are double-stranded DNA viruses. Parvovirus is a single-stranded DNA virus

2. The following are negatively stranded RNA viruses

False Picornaviruses

True Orthomyxoviruses

False Coronaviruses

False Flaviviruses

True Rhabdoviruses

Picornaviruses, coronaviruses and flaviviruses are positively stranded RNA viruses

3. The following viruses have segmented genomes

True Orthomyxoviruses

False Herpesviruses

False Paramyxoviruses

True Bunyaviruses

True Rotaviruses

The genome of orthomyxoviruses consists of 7 or 8 single stranded RNA segments, bunyaviruses 3 single stranded RNA segments, and rotaviruses 11 double stranded RNA segments.

4. The following are enveloped viruses

True Herpesviruses

False Adenoviruses

False Rotaviruses

False Parvoviruses

True Orthomyxoviruses

5. All viruses

False Contain DNA

False Contain RNA

True Contain protein

False Are susceptible to lipid solvents

True Are intracellular parasites

Viruses contain either DNA or RNA. All viruses contain protein. Only enveloped viruses are susceptible to lipid solvents. All viruses are intracellular parasites.

6. The following viruses are associated with human cancers

False HSV-2

True EBV

True HCV

False Adenoviruses

True HHV-8

HSV-2 was associated with genital cancers at one time but this has now been disproved. EBV is associated with Burkitt's lymphoma, nasopharyngeal carcinoma, and large-cell lymphomas in immunocompromised individuals. Although adenoviruses may be oncogenic in vitro, there is no evidence that they are associated with human cancers. HHV-8 is associated with Kaposi's sarcoma.

7. The following viruses may cause congenital infection

True HSV-2

True Rubella

True HIV

True HBV

True CMV

All the above viruses may cause congenital infection. Rubella and CMV are usually transmitted transplacentally in utero, whilst HIV, HBV and HSV-2 are usually transmitted perinatally during the birth process.

8. The following viruses have reverse transcriptase

True HIV

False Parvovirus

True HBV

False CMV

True HTLV-1

HIV and HTLV-1 are retroviruses. HBV is a DNA virus whose replication depend on a reverse transcriptase

9. The following viruses replicate in the nucleus

True Herpseviruses

False Poxviruses

False Picornaviruses

True Orthomyxoviruses

False Paramyxoviruses

All DNA viruses, with the exception of poxviruses replicate in the nucleus. All RNA viruses, with the exception of orthomyxoviruses, replicate in the cytoplasm

10. The following are viral zoonoses

False Rubella

True Rabies

True Hantaviruses

True Lassa Fever

True Japanese Encephalitis

Zoonoses are infections which are transmitted from a vertebrate animal to humans either directly, or indirectly through an arthropod vector. Rabies may be transmitted to human from various mammals. Hantaviruses and Lassa fever from rodents. The reservoir of Japanese encephalitis is in birds and pigs and it is transmitted to humans via culex mosquitoes

11. Reassortment of genes may occur with

False HSV-1

False HBV

False HIV

True Influenza A Virus

True Rotaviruses

Reassortment of genes occur in influenza A and rotaviruses. It is thought to be responsible for large changes in antigenicity

12. The following statements are true of prions

False Readily inactivated by autoclave at 121oC

False Contain

True Have long incubation periods

False Highly immunogenic

False May be readily cultured

Prions required autoclaving at 134 oC in order to be effectively inactivated.They consist probably solely of protein: no DNA had ever had demonstrated. Prion diseases are characterised by long incubation periods. Being host-derived, prion proteins are not immunogenic. They may not be cultured readily.

13. The following are "slow virus" diseases

False Herpes Simplex Encephalitis

True Creutzfeldt-Jacob disease

True Subacute Scelerosing Panecephalitis (SSPE)

False Rabies

True Progressive multifocal leucoencephalopathy (PML)

"Slow virus infections" refer to viral or prion infections of the brain characterised by a long incubation period which is in terms of years. Human prion diseases, Subacute Scelerosing Panecephalitis (SSPE), and Progressive multifocal leucoencephalopathy (PML) are considered as slow virus infections. Herpes Simplex Encephalitis and rabies are not.

14. HSV-1 infection may result in

True Encephalitis

True Gingivostomatitis

True Genital Herpes

True Corneal Ulcers

False Shingles

HSV-1 infection may result in encephalitis, gingivostomatitis, genital herpes, and corneal ulcers. Shingles arise from a previous infection by VZV

15. The following viruses are associated with a vesicular rash

False Rubella Virus

False Measles Virus

False Parvovirus

True HSV-1

True VZV

Rubella, measles, and parvoviruses cause a maculopapular rash

16. Cytomegalovirus (CMV)

True Primary infection is usually asymptomatic

True An infectious mononucleosis-like syndrome may occur during primary infection.

True May cause severe infection in immunocompromised individuals

True May cause congenital infection

True Reactivate from time to time

All the above

17. Epstein-Barr Virus (EBV) is associated with

True Infectious Mononucleosis

False Kaposi's Sarcoma

True Burkitt's lymphoma

True Nasopharyngeal carcinoma

False Adult T-cell lymphoma

HHV-8 is associated with Kaposi's sarcoma, HTLV-1 is associated with Adult T-cell lymphoma

18. HHV-8 is associated with

False Fifth disease

False Roseala Infantum

True Kaposi's Sarcoma

False Nasopharyngeal Carcinoma

False Oral leukoplakia

Parvovirus is associated with fifth disease, HHV-6 with Roseala Infantum, EBV with Nasopharyngeal Carcinoma and oral leukoplakia

19. The following viruses are thought to cause gastroenteritis

False Enteroviruses

True Caliciviruses

True Norwalk-like viruses

True Astroviruses

False Paramyxoviruses

Although enteroviruses may be found in the faeces, they are not associated with gastroenteritis. Paramyxoviruses are not associated with gastroenteritis

20. The following statements are true

True Human polyoma virus JC is associated with progressive multifocal leucoencephalopathy (PML)

False Human polyoma virus JC is associated with warts

False HPV-6 and HPV-11 are associated with genital cancers

True HPV-6 and HPV-11 are associated with Juvenile laryngeal papillomatosis

True Patients with Epidermodysplasia verruciformis are susceptible to widespread warts caused by HPV

Human papillomaviruses (HPV) are associated with warts. HPV-16 and 18 are associated with genital cancers. Patients with Epidermodysplasia verruciformis are susceptible to widespread warts caused by a variety of HPV types. These lesions may become cancerous later on in life.

21. The following statements are true

True Influenza A may undergo antigenic shift

False Influenza B may undergo antigenic shift

True Influenza A may undergo antigenic drift

True Influenza B may undergo antigenic drift

False Influenza B may respond to amantidine

Only influenza A is known to undergo antigenic shift. Both influenza A and influenza B may undergo antigenic drift. Only influenza A respond to amantidine

22. Respiratory Syncytial Virus

False Cause disease mainly in adults

True May cause bronchiolitis

False May be prevented by vaccination

False May be treated by amantidine

False May cause latent infections

RSV mainly causes disease in infants. It is the main cause of bronchiolitis. There is no vaccine available. It will not respond to amantidine but will respond to ribavirin. It is not known to cause latent infections,

23. HIV may respond to

True Nucleoside analogues

True Protease inhibitors

False Neuraminidase inhibitors

True Reverse transcriptase inhibitors

True Acyclovir

HIV may respond to reverse transcriptase inhibitors, many of which are nucleoside analogues. It may also respond to HIV protease inhibitors which are the most potent agents to date. Neuraminidase inhibitors are used for the treatment of influenza virus infections whilst acyclovir is used for herpesvirus infections.

24. During the incubation period of HIV infection, there is

False Little HIV replication

False HIV is mainly integrated into the genome of long-lived cell populations

True High turnover of CD4 cells

True The viral load has a direct bearing on the prognosis

False Little antibody against the HIV envelope

During the incubation period, there is a huge amount of viral replication and consequently a high turnover of CD4 cells. Only a very small proportion of HIV is integrated into the genome of long-lived cell populations. The viral load has a direct bearing on the prognosis. HIV envelope antibody remains at a high level throughout the incubation period.

25. Hepatitis A infection

False May result in chronic infection

True May be prevented by immunoglobulin

True May be prevented by vaccination

False Is highly infectious during the jaundice phase

False May result in cirrhosis

HAV infection does not result in chronic infection and therefore cirrhosis. It may be prevented by the administration of human normal immunoglobulin (HNIG), and active vaccination by an inactivated vaccine. By the time jaundice appears, there is little viral excretion and thus infectivity.

26. Hepatitis B infection

True May result in chronic infection

True May result in cirrhosis of the liver

True May result in hepatocellular carcinoma

True Is highly infectious when positive for HBeAg

True May respond to interferon therapy

HBV infection may result in chronic infection, cirrhosis of the liver and hepatocellular carcinoma. The presence of HbeAg indicates viral replication and thus infectivity. Chronic HBV infection may respond to interferon therapy.

27. The following statements are true of hepatitis B core escape mutants

True Associated with fulminant hepatitis

False HbeAg positive

True anti-HbeAg antibody positive

True HBV-DNA positive

False Anti-HbsAg antibody positive

Hepatitis B core escape mutants are associated with acute fulminant hepatitis. They are anti-HbeAg antibody positive and HBV-DNA positive. HbsAg is present and therefore they should be no anti-HbsAg antibody.

28. Hepatitis C virus

True May be transmitted by blood

True Is associated with hepatocellular carcinoma

True May respond to interferon therapy

False Has one stable genotype only

False May cause chronic infection

HCV is mainly transmitted by blood. It may cause chronic infection and is associated with hepatocellular carcinoma. It may respond to interferon therapy. There are a number of HCV genotypes.

29. The following statements are true

True Dengue virus infection result from bites by Aedes mosquitoes

True Cases of dengue haemorrhagic fever usually result from reinfection by a different serotype of dengue virus

False Pigs act as the reservoir for dengue virus

False Yellow fever is prevalent throughout Asia

True Yellow fever may be prevented by vaccination

Dengue virus infection result from bites by Aedes mosquitoes. Cases of dengue haemorrhagic fever usually result from reinfection by a different serotype of dengue virus: an immunopathological mechanism is thought to be involved. No animal reservoir is involved in the vast majority of dengue cases: transmission arise from a man-mosquito-man cycle. Yellow fever is not found in Asia, it is prevalent in some West African and Central and South American countries. It can be prevented by vaccination with a live attenuated vaccine.

30. Measles virus

True Infection may result in pneumonia

True Infection may result in encephalitis

False Undergo antigenic drift

False May respond to acyclovir

True May be prevented by vaccination

Measles virus infection may result in pneumonia and encephalitis. There is one stable serotype. Measles will not respond to acyclovir but can be prevented by vaccination.