

CHAPTER 1

INFECTIOUS DISEASE



1. With regards to pathogen associated molecular patterns (PAMPs) which of the following is correct?

- A. their main components are polypeptides
- B. are identical to constituents of host's innate immune
- C. recognized by humoral and cellular immune receptors
- D. their structure is exactly the same in all pathogens

Answer:

- A. their main components are polypeptides
- B. are identical to constituents of host's innate immune
- C. recognized by humoral and cellular immune receptors**
- D. their structure is exactly the same in all pathogens

“Innate immunity exists in almost all organisms including humoral and cellular immune receptors with wide specificity. These receptors identify numerous related molecular structures named PAMPs (pathogen associated molecular patterns). Exactly, PAMPs are polynucleotides and polysaccharides that differ a bit between different pathogens. However, PAMPs are not discovered in the host.”

AMERICAN ACADEMY OF OPHTHALMOLOGY 2014-2015, Section 1, P 3





2. In terms of mechanism of virulence which of the following is correctly matched?

- A. Blocking of lysosomal fusion by *Neisseria gonorrhoeae* and *Neisseria meningitidis*
- B. Antigenic surface variation by *Toxoplasma*
- C. Biofilm formation by *Chlamydia*, *Legionella* and *Mycobacterium*
- D. IgA protease by *Haemophilus influenzae*, *N gonorrhoeae*, and *N meningitidis*

Answer:

- A. Blocking of lysosomal fusion by *Neisseria gonorrhoeae* and *Neisseria meningitidis*
- B. Antigenic surface variation by *Toxoplasma*
- C. Biofilm formation by *Chlamydia*, *Legionella* and *Mycobacterium*
- D. IgA protease by *Haemophilus influenzae*, *N gonorrhoeae*, and *N meningitidis***

“Polysaccharide encapsulation: N meningitidis, Streptococcus pneumonia, Bacteroides and Haemophilus. Attachment: Neisseria meningitides and N gonorrhoeae. Antigenic surface variation: Chlamydia, influenza viruses and Borrelia recurrentis. Blocking of lysosomal fusion: Toxoplasma, Chlamydia, Legionella and Mycobacterium. IgA protease: Haemophilus influenzae, N meningitidis and N gonorrhoeae. Endotoxin: cell wall of Gram-negative bacteria. Exotoxin: tetanus or cholera. Biofilm formation: Staphylococci. Multiple mechanisms: coagulase-positive Staphylococcus aureus.”

AMERICAN ACADEMY OF OPHTHALMOLOGY 2014-2015, Section 1, P 4

3. The cellular immune system is responsible for:

- A. mainly control of acute infections
- B. antibody-mediated opsonization
- C. stimulation of the humoral immune system
- D. complement-mediated bacterial killing

Answer:

- A. mainly control of acute infections
- B. antibody-mediated opsonization
- C. stimulation of the humoral immune system**
- D. complement-mediated bacterial killing

“The humoral immune system contains cells originated from B lymphocytes, which is involved in antibody-mediated opsonization, bacterial killing via complement, antitoxin and mediation of infections of intracellular origin. The cellular immune system is characterized by the T lymphocytes, which involves in collaboration with and motivation of the humoral immune system, cytotoxicity of direct mechanism, releasing chemical messengers, and treating chronic infections. The efficacious relationship between humoral and cellular immune systems diminishes and commonly removes the infection, providing a situation for healing.”

AMERICAN ACADEMY OF OPHTHALMOLOGY 2014-2015, Section 1, P 4-5



4. *Staphylococcus epidermidis*, a gram positive cocci bacteria:

- A. colonizes the anterior nares and other skin sites in 5% of community isolates
- B. is the most common cause of prosthetic heart valve infections
- C. present in up to 15% of skin cultures
- D. is rare infectious organism of intravenous catheters and cerebrospinal fluid shunts

Answer:

- A. colonizes the anterior nares and other skin sites in 5% of community isolates
- B. is the most common cause of prosthetic heart valve infections**
- C. present in up to 15% of skin cultures
- D. is rare infectious organism of intravenous catheters and cerebrospinal fluid shunts

“In 15% of community isolates, Staphylococcus aureus is found in the anterior nares and other skin parts. Staphylococcus epidermidis is available almost all over the skin, in nearly 90% of skin cultures. If local defense becomes damaged, it can cause infection. It can adhere to prosthetic devices, which makes it the most isolated pathogen of prosthetic heart valve infections. Furthermore, it is a common infectious agent causing infection in those with cerebrospinal fluid (CSF) shunts or intravenous catheters.”

AMERICAN ACADEMY OF OPHTHALMOLOGY 2014-2015, Section 1, P 5-6

5. Postinfectious delayed, nonsuppurative, noninfectious complications of group A streptococcal infections include:

- A. scarlet fever
- B. glomerulonephritis
- C. rheumatoid arthritis
- D. Juvenile idiopathic arthritis

Answer:

- A. scarlet fever
- B. glomerulonephritis**
- C. rheumatoid arthritis
- D. Juvenile idiopathic arthritis

“Genetically mediated responses of humoral and cellular immune systems to specific group A streptococci strains cause postinfectious rheumatic fever and glomerulonephritis as late, noninfectious, nonsuppurative complications of infection.”

AMERICAN ACADEMY OF OPHTHALMOLOGY 2014-2015, Section 1, P 6



6. Prophylaxis for subacute bacterial endocarditis (SBE) is considered necessary for:

- A. routine ocular surgery in an uninfected patient
- B. the nasolacrimal drainage system surgery if the patient has a high-risk valvular condition
- C. surgical repair of orbital trauma in an uninfected healthy patient
- D. surgery involving the nasolacrimal drainage system or sinuses in all patients

Answer:

- A. routine ocular surgery in an uninfected patient
- B. the nasolacrimal drainage system surgery if the patient has a high-risk valvular condition**
- C. surgical repair of orbital trauma in an uninfected healthy patient
- D. surgery involving the nasolacrimal drainage system or sinuses in all patients

“In an uninfected patient, prophylactic antibiotic treatment for subacute bacterial endocarditis (SBE) is frequently not essential for routine ocular operations, despite the fact, if the patient has a high-risk cardiac congenital or valvular condition, it can be administered for operations on nasolacrimal drainage system or sinuses or orbital trauma surgical repair.”

AMERICAN ACADEMY OF OPHTHALMOLOGY 2014-2015, Section 1, P 7

7. You are planning for the nasolacrimal drainage system surgery in 32 year-old patient with high-risk cardiac congenital condition. His cardilogist advised you to consider prophylaxis for subacute bacterial endocarditis (SBE), however patient has history of urticaria caused by penicillin use, what is your drug of choice in this scenario?

- A. Ampicillin 2g IM or IV
- B. Cephalexin 2g Oral
- C. Clindamycin 600 mg 1M or IV
- D. Ceftriaxone 1g 1M or IV

Answer:

- A. Ampicillin 2g IM or IV
- B. Cephalexin 2g Oral
- C. Clindamycin 600 mg 1M or IV**
- D. Ceftriaxone 1g 1M or IV

“In an uninfected patient, prophylactic antibiotic treatment for subacute bacterial endocarditis (SBE) is frequently not essential for routine ocular operations, despite the fact, if the patient has a high-risk cardiac congenital or valvular condition, it can be administered for operations on nasolacrimal drainage system or sinuses or orbital trauma surgical repair. In case of allergy to penicillins or ampicillin and unable to consume oral drugs; ceftriaxonet or Cefazolin or Clindamycin could be dispensed. However, In those who have history of anaphylaxis, angioedema, or urticaria with penicillins or ampicillin, cephalosporins should not be used.”

AMERICAN ACADEMY OF OPHTHALMOLOGY 2014-2015, Section 1, P 7-8, Table 1-1

