

Test yourself in neurogenic contribution to allergic inflammation

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Choose only one answer:

1. The following are true about neurogenic inflammation except:

- a- It is triggered by the activation of primary sensory neurons.
- b- It is mediated by neuromediators.
- c- Neuromediators are mainly released from neurons.
- d- Immune and/or structural cells are mere responders to these mediators.

2. One of the following is a member of neurotrophins:

- a- Neurokinin B.
- b- Neurokinin A.
- c- Nerve growth factor.
- d- Neuropeptide Y.

3. The following are true about neurotrophins except:

- a- Neurotrophins act in autocrine as well as paracrine signaling.
- b- The potential role of neurotrophins in progression and amplification of allergic inflammation is of a great interest.
- c- Alveolar macrophages produce neurotrophins after allergen challenge.
- d- Under physiological conditions, the primary sources of neuromediators are cells of the immune system and structural cells.

4. One of the following is false about vasoactive intestinal peptide:

- a- It is an anti-inflammatory neuropeptide.
- b- It is a neurotransmitter of the inhibitory part of the nonadrenergic, noncholinergic nervous system.
- c- It is a pro-inflammatory neuropeptide.
- d- It has a role in the initiation of allergic inflammation.

5. Mark the incorrect statement:

- a- Neutral endopeptidase (NEP) is involved in tachykinin breakdown.
- b- NEP has been located to the airway mucosa.
- c- NEP activity is downregulated by steroid use.
- d- NEP activity is downregulated by smoking.
- e- Upregulation of NEP activity may result in control of acute asthma exacerbation.

6. Mark the correct statement:

- a- Eosinophils are the chief effector inflammatory cells in the early-phase response in allergy.
- b- Blood eosinophils from patients with allergy express Trk.
- c- Eosinophils obtained from BALF after allergen provocation express neurotrophin receptors.
- d- All members of mammalian neurotrophins result in a decrease of the survival of BALF eosinophils.

7. Choose the correct answer:

- a- Neuroimmune interactions amplify allergic inflammation.
- b- Nerve growth factor is involved in the development and maintenance of mast cell hyperplasia in the allergic airways.
- c- Neuromediators regulate mast cell degranulation and mediator release.
- d- All of the above.
- e- None of the above.

8. The following are true statements except:

- a- Angiogenesis encompasses the formation of vascular tissue from pre-existing blood vessels.
- b- Microvascular remodeling involves structural alterations of blood vessels with formation of new vessels.
- c- Some neurotrophins and tachykinins are vasoactive factors affecting endothelial cell biology and elicit angiogenesis.
- d- Angiogenesis and microvascular remodeling have an important role in the pathophysiology of bronchial asthma and atopic dermatitis.

9. The following are true about allergic inflammation except:

- a- Th2 cells orchestrate many aspects of allergic inflammation.
- b- Th2 cells produce an array of cytokines such as IL4, IL-5, IL-9 and IL-13.
- c- IL-4 is mainly involved in development, differentiation, recruitment and survival of eosinophils.
- d- Some neuromediators selectively support the activity of antigen-specific Th2 cells.

10. Choose the incorrect statement about bronchial asthma:

- a- Neurotrophin-induced airway hyperreactivity (AHR) may be the result of airway inflammation in bronchial asthma.
- b- Both peripheral and central neural mechanisms are also involved in the pathogenesis of asthma.
- c- Neurotrophin-induced neuronal plasticity may induce AHR.
- d- AHR and airway inflammation develop independently from one another.

11. Choose the incorrect statement about atopic dermatitis (AD):

- a- AD is a chronic inflammatory skin disease associated with cutaneous hyperreactivity to environmental triggers.
- b- AD is often the first step in the atopic march.
- c- Psychoneuro-immunologic factors and emotional stress are not important in evolution of AD.
- d- Mast cells play a key role in the development of inflammatory reaction to stress in AD.
- e- Enhanced levels of neuropeptides influence the exacerbation of AD through enhancement of mast cell degranulation.

12. The following are true about allergic rhinosinusitis except:

- a- The concentration of neuropeptides is increased in the nasal mucosa of patients suffering from chronic rhinosinusitis.
- b- Neurogenic inflammation contributes to the intensity of nasal obstruction, rhinorrhea and headaches in chronic rhinosinusitis.
- c- The nasal mucosa is densely innervated by sensory nerves containing several neuropeptides.
- d- None of the above.
- e- All of the above.

13. The following is an incorrect statement about ocular allergy:

- a- Ocular allergy is a common disorder affecting 20% of the population in developing countries.
- b- In allergic conjunctivitis, the main mediator is histamine.
- c- Disease severity can range from mild itching and redness to the more serious vision-threatening forms affecting the cornea.
- d- Neurogenic inflammation does not contribute to the pathophysiology of ocular allergy.

14. The following statements are true about assessment of airway inflammation except:

- a- Sputum markers tend to be more sensitive than blood when assessing airway inflammation.
- b- No single parameter can accurately classify the severity of airway inflammation.
- c- Normal clinical examination can rule out the presence of an underlying airway inflammation.
- d- BALF, sputum and peripheral blood samples have been used to assess the expression of neuromediators and their receptors in bronchial asthma.

15. Mark the incorrect statement:

- a- Neurotrophin antagonism for asthma therapy has not been tested in humans so far.
- b- Tachykinin receptor antagonists seem unlikely to confer any additional benefit to inhaled steroid therapy in treatment of asthma.
- c- Clinical studies regarding neurotrophin antagonism need to last for at least 3, preferably 6 or 12 months.
- d- Blocking either NK1 or NK2 receptor is a sufficient approach in asthma.

16. Nerve growth factor mediates neurogenic inflammation through:

- a- The development and maintenance of mast cell hyperplasia in the allergic airways.
- b- Stimulation of Th2 type shifted immune response.
- c- Eosinophil chemo-attraction.
- d- Stimulation of mast cell degranulation and mediator release.
- e- All of the above.

17. Tachykinins include all of the following except:

- a- Substance P
- b- Neurokinin A.
- c- Brain-derived neurotrophic factor.
- d- Neurokinin B.

18. Mark the true statement about neurogenic inflammation:

- a- Neurotrophins results in increased neuronal release of neuropeptides exhibiting a great degree of functional plasticity defined as neuronal plasticity.
- b- Neurotrophins are cross talks between immune and nervous systems in allergic inflammation.
- c- Neurogenic inflammation describes a vicious cycle of neuroimmune interactions that amplify allergic inflammation
- d- All of the above.

19. All are true about tachykinin family except:

- a- They are neurotransmitters of the excitatory part of the nonadrenergic, noncholinergic system.
- b- They have a widespread distribution in the central and the peripheral nervous system and also in non-neuronal structures
- c- The adequate stimuli for tachykinin release from the sensory nerves in the airways are of chemical nature
- d- Neuropeptide Y is a potent tachykinin.

20. Sources of neuromediators in allergic inflammation include:

- a- Eosinophils.
- b- Lymphocytes.
- c- Monocytes/macrophages.
- d- Structural cells.
- e- All of the above.

(Answers on page 93)