Pathophysiology 6th edition Banasik Test Bank

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MULTIPLE CHOICE

1. Indicators that an individual is experiencing high stress include all the following *except*
   a. tachycardia.
   b. diaphoresis.
   c. increased peripheral resistance.
   d. pupil constriction.

   ANS: D
   Pupils dilate during stress from the effects of catecholamines. Tachycardia, diaphoresis, and increased peripheral resistance are indicators of stress and also occur because of catecholamine release.

2. Which is *not* normally secreted in response to stress?
   a. Norepinephrine
   b. Cortisol
   c. Epinephrine
   d. Insulin

   ANS: D
   Insulin secretion is impaired during stress to promote energy from increased blood glucose. Norepinephrine is secreted during stress as a mediator of stress and adaptation. Cortisol is secreted during stress as a mediator of stress and adaptation and stimulates gluconeogenesis in the liver to supply the body with glucose. Epinephrine is secreted during stress as a mediator of stress and adaptation and increases glycogenolysis and the release of glucose from the liver.

3. Selye's three phases of the stress response include all the following *except*
   a. allostasis.
   b. resistance.
   c. alarm.
   d. exhaustion.

   ANS: A
   Allostasis is defined as the ability to successfully adapt to challenges. Allostasis may/may not occur in response to stress. Alarm, resistance, and exhaustion are the three phases of the stress response as described by Selye in the general adaptation syndrome.

4. Many of the responses to stress are attributed to activation of the sympathetic nervous system and are mediated by
   a. norepinephrine.
   b. cortisol.
   c. glucagon.
   d. ACTH.

   ANS: A

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Norepinephrine is secreted in response to activation of the sympathetic nervous system during stress by the adrenal medulla. Cortisol is secreted by the adrenal cortex. Glucagon is secreted by the pancreas. ACTH is secreted by the pituitary gland.

5. The effects of excessive cortisol production include
   a. immune suppression.
   b. hypoglycemia.
   c. anorexia.
   d. inflammatory reactions.

   ANS: A
   Cortisol suppresses immune function and inflammation and stimulates appetite. Cortisol leads to hyperglycemia by stimulating gluconeogenesis in the liver.

6. All the following stress-induced hormones increase blood glucose *except*
   a. aldosterone.
   b. cortisol.
   c. norepinephrine.
   d. epinephrine.

   ANS: A
   Aldosterone results in water and sodium retention and potassium loss in the urine. It does not affect blood glucose. Cortisol is a glucocorticoid secreted by the adrenal cortex. Cortisol stimulates gluconeogenesis in the liver, thus increasing blood glucose. Norepinephrine inhibits insulin secretion, thus increasing blood sugar. Epinephrine increases glucose release from the liver and inhibits insulin secretion, thus increasing blood glucose.

7. Allostasis is best defined as
   a. steady-state.
   b. a state of equilibrium, of balance within the organism.
   c. the process by which the body heals following disease.
   d. the overall process of adaptive change necessary to maintain survival and well-being.

   ANS: D
   Allostasis refers to the overall process of adaptive change necessary to maintain survival and well-being.

8. The primary adaptive purpose of the substances produced in the alarm stage is
   a. energy and repair.
   b. invoke resting state.
   c. produce exhaustion.
   d. set a new baseline steady-state.

   ANS: A
   These resources are used for energy and as building blocks, especially the amino acids, for the later growth and repair of the organism. The substances do not produce a resting state. The substances can produce exhaustion if they continue, but that is not the adaptive purpose of these. Although a new baseline steady-state may result from the stress response that is not the adaptive purpose of the substances produced during the alarm stage.

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9. Persistence of the alarm stage will ultimately result in
   a. stress reduction.
   b. permanent damage and death.
   c. movement into the resistance stage.
   d. exhaustion of the sympathetic nervous system.

   ANS: B
   If the alarm stage were to persist, the body would soon suffer undue wear and tear and become subject to permanent damage and even death. Actions taken by the individual during the resistance stage lead to stress reduction. The resistance stage may or may not occur following the alarm stage, based on resource availability. The sympathetic nervous system will continue to function, resulting in continued release of stress hormones.

10. The effect of stress on the immune system
    a. is unknown.
    b. has been demonstrated to be non-existent in studies.
    c. most often involves enhancement of the immune system.
    d. may involve enhancement or impairment the immune system.

    ANS: D
    Many studies demonstrate that long-term stress impairs the immune system, but many researchers identify that short-term stress may enhance the immune system.

MULTIPLE RESPONSE

1. Aldosterone may increase during stress, leading to (*Select all that apply.*)
   a. decreased urinary output.
   b. increased blood potassium.
   c. increased sodium retention.
   d. increased blood volume.
   e. decreased blood pressure.

   ANS: A, C, D
   Aldosterone increases water and sodium reabsorption and potassium excretion by the renal distal tubules and collecting ducts, thus leading to decreased urinary output, sodium retention in the body, and increased extracellular fluid volume. Because it leads to potassium excretion, aldosterone leads to decreased blood potassium.

2. Chronic activation of stress hormones can lead to (*Select all that apply.*)
   a. cardiovascular disease.
   b. depression.
   c. impaired cognitive function.
   d. autoimmune disease.
   e. overactive immune function.

   ANS: A, B, C, D

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Excessive cortisol levels promote hypertension, atherosclerosis, and the development of cardiovascular disease. Chronic overactive stress hormones may result in atrophy and death of brain cells. Elevated levels of stress hormones are found in individuals with depressive disorders. Chronic stress leads to immune function impairment, rather than overactive immune function, and has been implicated in autoimmune disorders.

3. Events which occur during the alarm stage of the stress response include secretion of (*Select all that apply.*)
   a. catecholamines.
   b. ACTH.
   c. glucocorticoids.
   d. immune cytokines.
   e. TSH.

   ANS: A, B, C, D
   During the alarm stage, catecholamines (epinephrine, norepinephrine), ACTH, glucocorticoids, and immune cytokines are secreted. TSH is not secreted during the stress response.

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