CME Pre-Test

Wound Healing and Burn Injuries

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1. Fetal wound extracellular matrix contains which of the following?
   a) Hyaluronic acid
   b) Unconjugated bilirubin
   c) Urea
   d) Ascorbic acid
   e) Free ketone bodies

2. Which of the following cells applies physical force to a healing wound?
   a) Neutrophil
   b) T-lymphocyte
   c) Cutaneous epithelial cell
   d) Myofibroblast
   e) Mast cell

3. All of the following have shown promise for management of chronic wounds except which one?
   a) Keratinocytes
   b) Biologic skin substitutes
   c) Topical cyclosporin
   d) Negative pressure
   e) Growth factors

4. The most common type of burn treated in the outpatient setting is which of the following?
   a) Tar burns
   b) Acid burns
   c) Low-voltage electrical injury
   d) Scald burns
   e) Flame burns

5. In regions with high levels of poverty, such as sub-Saharan Africa, which of the following contributes significantly to the health burden of burn injury?
   a) Lack of smoke alarms
   b) Lack of fireproof clothing
   c) Shortage of water
   d) Recurrent high winds
   e) Use of open fires for cooking

6. Which of the following has the longest heat retention?
   a) Grease
   b) Hot water
   c) Coffee
   d) Milk
   e) Hot tea
7. Which of the following has promise for reducing the risk of scald burns in children?
   a) Equipping each kitchen with a fire extinguisher
   b) Providing fireproof clothing for infants and young children
   c) Turning the handles of pots toward the rear of the stove during cooking
   d) Education of parents on the use of flammable liquids
   e) Reducing the use of gas stoves

8. All of the following are suggestive of intentional scald burn injury except which one?
   a) History of prior fracture
   b) History of prior burn injury
   c) Symmetrical burn injury
   d) Burn wound appears older than indicated by the history provided
   e) Burn of the scalp and face

9. Health-related quality of life is reduced compared with uninjured, age-matched controls for what interval following severe burn injury?
   a) 6 months
   b) 1 year
   c) 18 months
   d) 7 years
   e) 3 years

10. Which of the following is associated with reduced psychosocial recovery following burn injury?
    a) Burns in patients over 70 years of age
    b) Burns of the hands
    c) Hypertrophic scarring
    d) Low, preburn level of education
    e) Inhalation injury

11. What percentage of burn injuries is treated in a verified burn center?
    a) 22%
    b) 45%
    c) 60%
    d) 75%
    e) 90%

12. What percentage of burned patients treated in nonburn center facilities requires operative management of the burn wound?
    a) 44%
    b) 23%
    c) 50%
    d) 4%
    e) 71%

13. Which of the following is a common finding within the first week after a 40% total body surface area burn in a 7-year-old patient?
    a) Anemia
    b) Alkalosis
    c) Hyperglycemia
    d) Hyperbilirubinemia
    e) Hypercholesterolemia

14. Genomic analysis of blood from patients with severe burn injury shows that which percentage of genes is altered?
    a) 10%
    b) 5%
    c) 1.5%
    d) 24%
    e) 80%
15. All of the following are mediators of the postburn metabolic response except which one?
   a) Catecholamines
   b) Corticosteroids
   c) Parathyroid hormone
   d) Insulin
   e) Growth hormone

16. Galactorrhea and/or amenorrhea occur in which percentage of women after burn injury?
   a) 2%
   b) 12%
   c) 36%
   d) 16%
   e) 54%

17. Which of the following causes significant reduction in postburn hypercatabolism?
   a) Early parenteral nutrition
   b) Therapeutic hypothermia
   c) Plasmapheresis
   d) Administration of ACTH
   e) Early excision and grafting of burn wounds

19. Mortality at one year after discharge from a burn center is primarily influenced by which of the following?
   a) Comorbid disease
   b) Burn size
   c) Age at the time of burn injury
   d) Inhalation injury
   e) Use of meshed skin grafts for burn coverage

20. Bloodstream infections occur in 4% of patients who are hospitalized after burn injury. Which of the following organisms is associated with the highest mortality risk from bloodstream infections?
   a) MRSA
   b) Coagulase-negative S. aureus
   c) P. aeruginosa
   d) Streptococcus sp.
   e) Methicillin-sensitive S. aureus

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1. An estimate of the annual patient-days required to care for patients with complications due to healing failure is which of the following?
   a) 150,000 days/year
   b) 65,000 days/year
   c) 250 million days/year
   d) 10 million days/year
   e) 650,000 days/year

2. According to the review by Wong and coauthors, recent research has confirmed an important role in wound healing for which of the following cell types?
   a) Fibroblasts
   b) Neutrophils
   c) T-lymphocytes
   d) Stem cells
   e) Mast cells

3. Wong and coauthors note that all of the following contribute to scarless fetal wound healing except which one?
   a) Extracellular matrix rich in hyaluronic acid
   b) Suppression of B-lymphocytes
   c) Reduced levels of proinflammatory cytokines
   d) Reduced numbers of inflammatory cells
   e) Extracellular matrix rich in chondroitin sulfate

4. Stem cells are active in which of the following wound healing processes?
   a) Generation of new blood vessels
   b) Suppression of bacteria
   c) Production of antiinflammatory cytokines
   d) Suppression of extracellular matrix proteins
   e) Accelerating fibrosis

5. Application of physical force that alters the protein content of the extracellular matrix in the healing wound is the function of which of the following cells?
   a) Neutrophil
   b) Epithelial cell
   c) B-lymphocyte
   d) Myofibroblast
   e) Basophil cell

6. Research reported by Sinno and coauthors demonstrated improved early wound strength in animals treated with a chemotactic agent. The agent used was which of the following?
   a) Tumor necrosis factor alpha
   b) Complement C5
   c) Interferon gamma
   d) Insulin
   e) Arginine
7. The systematic review of the literature by Greer and coauthors documented evidence of benefit in the management of chronic wounds for all of the following except which one?
   a) Biologic dressings
   b) Negative pressure therapy
   c) Keratinocyte therapy
   d) Platelet-derived growth factor
   e) Oxandrolone

8. Research reported by Lan and coauthors provided insight into the healing process in diabetic animals. They showed that hyperglycemia accentuated inflammation through increased neutrophil recruitment stimulated by which of the following?
   a) Glucagon
   b) Interleukin-6
   c) Caspase A
   d) Interleukin-8
   e) Oxygen-free radicals

9. A prospective randomized trial showed that significant reductions in size of pressure ulcers of the buttocks in patients with spinal cord injury occurred with which of the following treatments?
   a) Topical fibrin
   b) Topical granulated sugar
   c) Wet-to-dry dressings changed four times daily
   d) Topical silver sulfadiazine cream
   e) Ultraviolet C radiation

10. Research results reported by Guthrie and coauthors showed that wound dressings coated with which of the following reduced bacterial counts in experimental wounds?
    a) Antibiotic ointment
    b) Iodine
    c) Silver particles
    d) Isopropyl alcohol
    e) Hypertonic saline

11. Data from research conducted in Bangladesh showed that burn injury in children was more likely when which of the following conditions was present?
    a) Lighting provided by kerosene lanterns
    b) Dwellings without fire extinguishers
    c) Dwellings without smoke alarms
    d) Dwellings with straw roofs
    e) Absence of community fire safety education

12. Data from a report by Willis and coauthors showed that the single important risk factor for depressed pulmonary function at five-years postburn injury was which of the following?
    a) History of smoking prior to burn injury
    b) Large burn size
    c) History of endotracheal intubation early after injury
    d) History of asthma
    e) Age > 70 years

13. Compared with unburned skin, red cell flow in the microcirculation is reduced by which of the following proportions?
    a) 20%
    b) 4.5%
    c) 32%
    d) 60%
    e) 85%

14. Research on the metabolic response to burn injury has shown that hypermetabolism persists at six months after injury. The observed increase, compared with normal unburned patients, is which of the following?
    a) 105%
    b) 165%
    c) 120%
    d) 185%
    e) 220%
15. Hepatomegaly is commonly observed after burn injury. Enlargement of the liver is because of which of the following?
   a) Tissue edema
   b) Hepatic fibrosis
   c) Infiltration with neutrophils
   d) Fatty infiltration
   e) Biliary stasis

16. Research reported by Patel and coauthors showed that bloodstream infection with *P. aeruginosa* occurred most commonly with which of the following?
   a) Use of meshed skin for burn wound coverage
   b) Patient age > 55 years
   c) Male patient
   d) Concurrent pneumonia due to *P. aeruginosa*
   e) Use of aerosolized antibiotics for pneumonia treatment

17. Monitoring of patients undergoing resuscitation using the Parkland formula classically relied on which of the following?
   a) Systemic lactate levels
   b) Cardiac output measurements
   c) Central venous oxygen saturation
   d) Urine output
   e) Arterial pH

18. Potential causes of increased fluid volumes administered during burn resuscitation include all of the following except which one?
   a) Overestimation of burn wound extent and severity
   b) Delay in transport of patients to burn centers
   c) Use of “goal directed” fluid therapy strategies similar to those used in septic patients
   d) Hypotension caused by opiate medications
   e) Increased use of hypertonic fluid resuscitation

19. The standard definition of intraabdominal hypertension is?
   a) Increased abdominal wall tension and decreased arterial oxygen tension
   b) Bladder pressure > 12 mmHg
   c) Increased abdominal wall tension with colonic dilation
   d) Increased peak airway pressure in a patient with no abdominal pathology
   e) Inappropriate diuresis in a patient with a tense abdominal wall

20. Clinical signs of inhalation injury include which of the following?
   a) Hypocalcemia
   b) Burns of the anterior chest
   c) Carboxyhemoglobin level > 10% within 1 hour of burn injury
   d) Metabolic acidosis
   e) Mean arterial pressure < 110 mmHg

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21. This issue met the stated learning objectives.
   a) Strongly agree
   b) Agree
   c) Neutral
   d) Disagree
   e) Strongly disagree

22. The content was relevant to my educational needs and practice environment.
   a) Strongly agree
   b) Agree
   c) Neutral
   d) Disagree
   e) Strongly disagree
23. There are potential barriers to incorporating what I have learned from this issue into my practice.
   
a) Strongly agree
b) Agree
c) Neutral
d) Disagree
e) Strongly disagree

24. The content was fair, objective, and unbiased.

   a) Strongly agree
b) Agree
c) Neutral
d) Disagree
e) Strongly disagree
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