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Mild Hyperbaric Oxygen Therapy Test

Chapters 1-6

1. Mild hyperbaric oxygen therapy (mHBOT) is defined as:

- A. a small chamber that is placed over an extremity and pressurized with oxygen. The patient does not breathe the oxygen, nor is the remainder of the body pressurized.
- B. the pressure of a gas over a liquid the amount of the gas that diffuses into the liquid.
- C. a portable emergency response piece of equipment that is quickly and easily assembled and transported.
- D. the medical practice of breathing pure oxygen while in a sealed chamber that has been pressurized at 1 to 1.5 times the normal atmospheric pressure.**

2. MHBOT utilizes filtered, pressurized ambient air to dissolve _____ directly into the plasma, cerebrospinal fluid, flooding tissues, and vital organs.

- A. blood
- B. oxygen**
- C. medication

D. water

3. **As a newer therapy, mHBOT has only been officially approved by the FDA to treat what specific condition?**
 - A. carbon monoxide poisoning
 - B. brain abscesses
 - C. **acute mountain sickness**
 - D. decompression sickness

4. **Monoplace chambers are typically constructed of pressure-safe, clear acrylic because:**
 - A. This is a cheaper alternative to more expensive, but inferior options
 - B. The acrylic is often coated with a special bond, one which has a soothing effect on the patients inside
 - C. Other materials have been deemed unsafe by the FDA in recent years.
 - D. **Transparent walls offer clinical staff a clear view of the patient, and the patient enjoys a less “closed-in” feeling**

5. **Define Topical oxygen, or topox, another hyperbaric treatment option -**
 - A. **a small chamber is placed over an extremity and pressurized with oxygen. The patient does not breathe the oxygen, nor is the remainder of the body pressurized.**
 - B. the pressure of a gas over a liquid the amount of the gas that diffuses into the liquid.
 - C. a portable emergency response piece of equipment that is quickly and easily assembled and transported.
 - D. the medical practice of breathing pure oxygen while in a sealed chamber that has been pressurized at 1 to 1.5 times the normal atmospheric pressure.

6. **Define portable hyperbaric stretchers:**
 - A. a camp bed, particularly a portable, collapsible one.

- B. a bed specially designed for hospitalized patients or others in need of some form of health care
- C. a small chamber, placed over an extremity and pressurized with oxygen. The patient does not breathe the oxygen, nor is the remainder of the body pressurized.
- D. **portable units/emergency response equipment that are quickly and easily assembled and transported. These units are used to save lives as well as transport patients who cannot, for one reason or another, be decompressed**

7. A clergyman and physician by the name of Henshaw created what device?

- A. pneumatic laboratory
- B. mobile hyperbaric operating theater
- C. **domicilium**
- D. Timken Tank

8. **True/False** - Henshaw's device worked by using a system of bellows to change the pressure in an airtight chamber. In this way, it was a chamber capable of both hyperbaric and hypobaric environments.

9. According to Henshaw, hyperbaric conditions with were beneficial for people with _____ conditions.

- A. **acute**
- B. chronic

10. Meanwhile, the city of _____ became the site of the first North American hyperbaric center in 1860.

- A. **Oshawa, Ontario in Canada**
- B. San Francisco

C. Toronto, Ontario in Canada

D. Kansas City

11. The majority of research performed on hyperbaric oxygen therapy can be credited to a medical doctor named Churchill Davis. Davis was especially interested in how much better _____ patients under _____ therapy reacted while utilizing hyperbaric oxygen.

A. amputee / physical

B. cancer / radiation

C. trauma / physical

D. Transplant / radiation

12. What types of ailments, with regards to scientific testing, might easily be prevented via use of the domicilium?

A. joint pain/afflictions

B. dental afflictions

C. rectal afflictions

D. respiratory afflictions

13. Boyle's Law is defined as:

A. For every action, there is an equal and opposite reaction

B. Matter can be neither created nor destroyed, though it can be rearranged. Mass remains constant in an ordinary chemical change.

C. as long as the temperature of a set amount of gas stays constant, the pressure and volume are always constant. This law also says that if the volume decreases with constant temperature and gas molecules, then the pressure increases. The opposite is also true.

D. the pressure of a gas over a liquid increases the amount of the gas that diffuses into the liquid.

14. Henry's Law is defined as:

- A. Matter can be neither created nor destroyed, though it can be rearranged. Mass remains constant in an ordinary chemical change.
- B. Equal volumes of gases under identical temperature and pressure conditions will contain equal numbers of particles (atoms, ion, molecules, electrons, etc.).
- C. as long as the temperature of a set amount of gas stays constant, the pressure and volume are always constant. This law also says that if the volume decreases with constant temperature and gas molecules, then the pressure increases. The opposite is also true
- D. **the pressure of a gas over a liquid increases the amount of the gas that diffuses into the liquid.**

15. Who discovered oxygen in 1773?

- A. Anthony Bardeen
- B. Sir Isaac Newton
- C. Nikola Tesla
- D. Carl Wilhelm Scheele

16. In its gaseous state, oxygen is:

- A. colorless
- B. odorless
- C. tasteless
- D. **All of the above**

17. True/False - Oxygen is non-toxic to anaerobic organisms. If False, explain why. – it is toxic

18. If the body is not processing oxygen and oxygen saturation falls below ____ percent, then the body is showing signs of hypoxia.

- A. 95
- B. **85**
- C. 90
- D. 80

19. True/**False** - A lack of oxygen is known as anoxia.

20. True/**False** - A complete lack of oxygen is known as hypoxia.

21. After _____ minutes without oxygen, brain cells are destroyed, and an extended period of hypoxia leads to brain damage and, ultimately, death.

- A. **4-6**
- B. 2-3
- C. 7-8
- D. 9-10

22. Define the circulatory system.

- A. The system comprising a network of lymphatic vessels that carry a clear fluid called lymph. Defends the body against disease-causing agents.
- B. Enables the body to move using muscles
- C. Mechanical and chemical processes that provide nutrients via the mouth, nose, trachea, lungs, and diaphragm.
- D. **a vast network of organs and vessels that is responsible for the flow of blood, nutrients, oxygen and other gases, and hormones to and from cells.**

23. The nervous system is defined as.

- A. **The body's electrical wiring. It controls and coordinates every function of the body.**
- B. Enables the body to move using muscles
- C. The system comprising a network of lymphatic vessels that carry a clear fluid called lymph. Defends the body against disease-causing agents
- D. Provides chemical communications within the body using hormones

24. True/False – The spinal cord should be straight when viewed from front to back, and have three curves when viewed from the side. If False, explain why.

25. Some of the nerve disorders that can affect the nervous system are:

- A. nerve compression
- B. vascular disorders such as stroke
- C. transient ischemic attacks (TIA), subarachnoid hemorrhages, subdural hemorrhages and hematomas, and extradural hemorrhages.
- D. **All of the above**
- E. None of the above

26. True/False - The mild hyperbaric chamber is filled with compressed ambient air from 3 to 5.5 pounds per square inch (1.3 ATA max), and the pressure is equivalent to being 15 feet below sea level. If False, explain why. – **2-4.5, 11 feet**

27. **True/** False - Because oxygen can function as an antibiotic, hyperbaric oxygen therapy is currently used to treat all of these ailments: gas gangrene, necrotizing fasciitis, diabetic foot infections, refractory osteomyelitis, neurosurgical infections, and fungal infections

28. With regards to oxygen, a free radical is defined as:

- A. **any atom, molecule, or ion that has an unpaired valence electron.**
- B. any molecule produced through the bonding together of several amino acids
- C. three or more sugar molecules bonded together.
- D. oily molecules that do not dissolve in water or evaporate easily

29. Superoxide is sent out by the immune system to kill invaders. The cells that send this out have an enzyme called superoxide dismutase, which basically neutralizes the superoxide so it:

- A. **does not harm the cell it wishes to protect.**
- B. Harms the cell it wishes to protect, but still maintains a benefit
- C. Neutralizes the cell entirely, leading to a quicker recovery
- D. Acts as a placebo effect, making the patient feel as if they're getting better while the body continues to fight infection.

30. Hydroxyl radicals are used much in the same way but more sparingly. These are released for specific types of bacteria, but they cannot be neutralized with an enzyme. As a result, the body uses them _____ as cells can only be protected from the free radical by use of melatonin and dietary antioxidants.

- A. at a rapid rate
- B. **sparingly**

31. True/ **False** - Vasculogenesis relates to wound healing in that vasculogenesis refers to the creation of vascular tissue in the body, which will result in increased blood flow to that area. This has to do with wound healing as the increase of vascularity to that area results in a decreased ability of that tissue to heal.

32. **True**/ False - HBOT care might positively affect late tissue radiation injuries (LTRI) because the leading theory is that the radiation causes progressive endarteritis of the capillaries. This obviously leads to hypoxia of the tissue and

subsequent unhealed ulcers. The tissue cannot heal itself because of the lack of resources associated with the lack of blood flow.

33. The study showed that HBOT is likely effective for late radiation tissue injury of the pelvis, with demonstrated efficacy specifically for radiation damage to what two parts?
- A. **The anus and rectum**
 - B. lymph nodes and scrotum
 - C. diaphragm and lungs
 - D. vulva and rectum
34. Some people used to think that HBOT would _____ the amount of inflammation in the body, especially in the respiratory system. The body produces ROS and RNS with the use of the HBOT therapy.
- A. **increase**
 - B. decrease
35. HBOT has a need for more research into its ability to help people suffering from which autism spectrum disorder(s)?
- A. Autistic disorder
 - B. Asperger's syndrome
 - C. Pervasive developmental disorder
 - D. **All of the above**
36. True/**False** – There is always an inherent risk of oxygen toxicity when using a hyperbaric oxygen therapy chamber. If False, explain why – **The chambers use filtered, ambient air, so there is no risk of oxygen toxicity to the body, even with regular use.**

37. Once inside the chamber, what type(s) of communication are possible between the patient and physician?

- A. visual
- B. verbal
- C. **both visual and verbal**

38. Milder side effect(s) associated with HBOT include:

- A. claustrophobia
- B. fatigue,
- C. headache
- D. **All of the above**

39. What type of clothing is allowed within the HBOT chamber?

- A. **only clean, made of cotton**
- B. only clean clothing made of rayon
- C. only clean clothing made of silk
- D. only clean clothing made of wool

40. What two types of drinks should be avoided 4 hours prior to treatment in the HBOT chamber?

- A. water and fruit juice
- B. **alcohol and carbonated drinks**
- C. water and alcohol

D. alcohol and fruit juice