

Medical test about allen

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1. Why did Allen's heart rate and blood pressure fall in this time of emergency (i. e. at a time when you'd expect just the opposite homeostatic response)? Pg. 969 This occurred because Allen's spinal cord has decreased perfusion due to damage, and a broken vertebral bone. Also, there has been a disruptions of the sympathetic fibers of his autonomic nervous system therefore it can no longer stimulate the heart. Allen likely has spinal shock.

2. Upon admission to the hospital, Allen's breathing was rapid and shallow, can you explain why? Pg. 969 Due to Allen's fall he likely has an incompetent diaphragm due to injuring a cervical segment. This would alter effect the lower motor neurons and external intercostal muscles. This would cause his chest x-ray to show a decreased lung expansion. This may have caused Allen to have to take rapid shallow breaths to maintain oxygenation. Overall, interruption of spinal innervation to the respiratory muscles would also explain his acidotic state.

3. Why did Allen lose some sensation to his arms and all sensation from the upper trunk down? This is because Allen's C5 segment was injured. Therefore, the dorsal column tracts and spinothalamic tracts were altered. This would cause Allen to have lost and decreased sensations.

4. Why did Allen have dry skin and a fever upon admission to the hospital? pg. 970 The rationale for the dry skin and fever is that Allen had lack of sympathetic and hypothalamic control. Therefore, his body adapted to the temperature of the environment as well as attempting to increase extracellular fluid. Overall, spinal shock would result in these symptoms along with decreased sweat production resulting from decreased sympathetic motor neuron stimulation.

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5. Based on the physical exam findings, which vertebral bone do you think was fractured? Give reasons for your answers? Pg. 969 Based on the physical findings I would say Allen's fracture occurred at C5. I believe this is where the fracture occurred because Allen had minimal biceps brachial stretch reflex, was able to raise his shoulders and tighten them, and could tighten his biceps.

In addition Allen could not raise his arms against gravity, had flaccid lower extremities, and was without triceps or wrist extensor reflexes, and other muscle stretch reflexes were absent. If the fracture was at C4-5 Allen would not be able to shrug his shoulders and if the fracture was at C7 he could extend his flexed arms. Top of Form

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6. What is the normal pH of blood? Why was Allen's blood pH below normal? Pg. 970-971. The normal blood pH is between 7.35 and 7.45. Allen's blood was acidotic due to a decrease in lung expansion and an alteration in the perfusion to his spinal cord. He also has an alteration in spinal innervation to the respiratory muscles including the phrenic nerve that controls the diaphragm. This would further cause Allen to not be able to adequately take in enough oxygen and blow off enough CO₂ to adequately have gas exchange, within the alveoli. Respiratory failure.

7. What is the primary muscle of respiration? What nerve initiates this muscle? The primary muscle of respiration is the diaphragm. The nerve that initiates this muscle is the phrenic nerve.

8. Which spinal neurons to the nerve you named in question #7? Pg. 969. The cervical spinal nerve C3-5 innervate the phrenic nerve. These are the lower motor neurons.

9. By four days after the injury, some of Allen's signs and symptoms had changed. Allen's arm muscles were still flaccid, yet his leg muscles had become spastic and exhibited exaggerated stretch reflexes. Use your knowledge of motor neural pathways to explain these findings. Pg. 969. Allen is experiencing these signs and symptoms because he is his spinal shock is now resolved. Therefore his lower motor neurons will then be able to fire impulses unlike the upper motor neurons due to the injury being at C5. Therefore, due to his cervical injury muscle spasticity, bladder activity, and reflex activity will begin. This is called spastic paralysis.

10. Why did Allen suffer from urinary incontinence? Pg. 970. Allen suffered from urinary incontinence because of autonomic dysfunction. Initially autonomic dysfunction causes an areflexic bladder, also known as a neurogenic bladder. This means his bladder had zero ability to contract. Autonomic dysfunction then leads to urinary retention.