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by Y R

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Physiology Discussion

When there is no adequate production of surfactant, the inadequacy leads to respiratory distress syndrome. In essence, a surfactant is a compound secreted by type II alveolar cells that help prevent alveoli from collapsing (Johnson et al., 2016). Since alveoli contain a fluid, the lungs produce surfactant to lower surface tension in that fluid. Thus, enabling inflation and preventing the breaking up of alveoli. In the case of a newborn baby, mainly prematurely born, it may not make adequate surfactant lower the breathing resistance. As a result, when collapsing of alveoli begin to happen, cells that are damaged start to collect, blocking the airway further. Therefore, a newborn commences working more harder to inhale and exhale in an attempt to re-inflate the airway that is collapsed. The above process can result in respiratory acidosis since the baby takes in less oxygen and more Carbon dioxide accumulates (builds up). The disorder above happens when the human lungs are incapable of getting rid of the Carbon dioxide the body produces (Johnson et al., 2016). Hence, the latter surplus causes the blood PH, besides other body fluids, to attenuate, making them acidic.

Owing to the body's incapability to discard Carbon dioxide from the lungs, the body's respiratory drive will increase to compensate for the buildup of Carbon dioxide. The body will try to compensate by buffering. A buffer is a substance dissolved in water that counteracts variations in PH. The carbonic acid-bicarbonate buffer system is the fastest acting of the buffer system. Buffering PH changes triggered by organic and fixed acids in ECF are the primary task of this system. The protein buffer system will increase bicarbonate to buffer the increased hydrogen. Renal compensation may also occur if this disorder is not corrected within a few days. In this case, the renal buffer system will try to secrete carbonic acid. The body's overall goal is to maintain a normal pH of 7.35-7.45. The newborn may need positive pressure oxygen to be given along with surfactant to help them breathe on their own (Bledsoe & Porter, 2017). To inhale a normal tidal volume, the newborn would have to inhale more forcefully to get the same tidal volume as a healthy individual. Thus, causing respiratory distress.

References

Johnson, B. R., Ober, W. C., Ober, C. E., Silverthorn, A. C. (2016). *Human Physiology: An Integrated Approach*. United States of America: Pearson Education, Inc.

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