HYPONATREMIA

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Overview

Hyponatremia (low sodium levels in the blood) has increasingly been recognized as a potentially serious complication of prolonged exercise, especially in ultradistance sports. Exercise associated hyponatremia occurs when an athlete loses salt (sodium) and other electrolytes through sweat and replaces the fluid loss with just water, neglecting to replace the lost sodium. The intake of water during exercise maintains an athlete's fluid levels but dilutes the sodium concentration in the blood, leading to states of "fluid overload" hyponatremia during prolonged periods of exertion.

Symptoms

Mild symptoms of low sodium levels are nonspecific and include confusion, headaches, nausea, dizziness, malaise and fatigue.[1] When sodium concentration drops further, more specific symptoms such as seizures, coma, altered mental status and death can occur. Studies of long distance triathletes looking at sodium and body weight, pre- and post-race, found that runners who stayed the same weight or gained weight (mainly water weight) were more likely to develop hyponatremia. Other studies of marathoners have demonstrated a higher incidence of hyponatremia in slower runners—the highest incidence of hyponatremia seen in runners finishing a marathon after 4 hours 20 minutes. These slower finishers were more likely to have participated in a large-group training program for beginners, which promoted aggressive hydration practice.[2]

Complications

The central nervous system (CNS), especially the brain, is very sensitive to electrolyte balances. This is evidenced by the fact that hyponatremia involves CNS symptoms like headache, altered mental status and coma. If the low sodium level is corrected (replenished) at too fast a rate the patient may experience brain damage as a result of water shifts into the brain—this is called cerebral edema (brain swelling). To avoid neurologic complications, the sodium is replaced with sodium rich IV fluid at an appropriately slow rate of correction in an intensive healthcare setting.
Treatment
Athletes experiencing symptoms of hyponatremia should seek medical care. Mild cases are treated simply with oral intake of appropriate sodium to replace the loss. Severe cases involve slowly replenishing sodium levels with sodium rich intravenous (IV) fluid in a closely monitored, healthcare setting.

Prevention
Avoid aggressive water-only hydration practices such as "do not wait until you're thirsty to drink" and advice like "drink until your urine is clear" based on misguided fears of dehydration. Some research studies predict that long distance triathletes should lose about 4% of body mass during the race in order to maintain a normal blood sodium concentration. Ultradistance athletes should use a combination of water and electrolyte replacement (sports drinks or adding electrolyte powder to water) in order to achieve an appropriate balance of fluids and electrolytes during and after the race and to avoid fluid overload (dilutional) hyponatremia. Athletes should monitor their weight before and after training sessions as a guide to appropriate fluid consumption, with the goal to avoid weight gain[3].

REFERENCES
3. UpToDate www.uptodate.com