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Hyponatremia

Doctor to Doctor

Hyponatremia



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Hyponatremia

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Hyponatremia is one of the most common electrolyte disorders, affecting an estimated 3.2 to 6.1 million individuals in the United States annually. Hyponatremia is defined as a serum sodium concentration of less than 135 meq per liter. Hyponatremia can be classified into three main types.

In hypervolemic hyponatremia there is excess salt and water retention, however, the retention of water is in excess of salt retention leading to hyponatremia. It is most commonly associated with congestive heart failure and cirrhosis as well as nephrosis.

The other type of hyponatremia is hypovolemic hyponatremia where the patient has decrease in salt and water, however, the decrease in salt is more than that of water. Common clinical conditions associated with hypovolemic hyponatremia are diarrhea and diuretic use.

The most common cause of hyponatremia is euvolemic hyponatremia. In this condition, there is no evidence of salt or water depletion, but there is slight excess of water leading to hyponatremia. Common clinical conditions associated with euvolemic hyponatremia are syndrome of inappropriate anti-diuretic hormone secretion, medications, hypothyroidism and glucocorticoid deficiency.

The symptoms of mild hyponatremia can be very subtle, including difficulty with concentration, gait disturbances as well as attention problems. Marked decrease in serum sodium concentration in a short period of time can also lead to severe mental status changes including seizures and even brain herniation. These consequences happen as a result of brain edema.

The treatment of hyponatremia depends on the underlying etiology. Hypovolemic hyponatremia is treated with salt repletion in the form of oral salt or intravenous isotonic saline. Caution needs to be exercised in repleting fluids in hypovolemic hyponatremia because of the risk of rapid correction.

In the case of mild hypervolemic hyponatremia, the treatment of choice is water restriction. If hyponatremia is severe and or associated with symptoms then small amounts of 3% hypertonic saline can also be given to help improve the symptoms of hyponatremia.

Euvolemic hyponatremia continues to perplex a lot of clinicians. Conventionally the treatment for euvolemic hyponatremia has been fluid restriction and salt either in the oral form or as hypertonic saline if severe.

Over the last decade the development of vasopressin receptor antagonist have provided a new alternative to the therapy of patients with hyponatremia. These agents cause pure water diuresis by blocking vasopressin receptors in the collecting tubule and spare salt loss therefore raising plasma sodium concentration. To date, we have two vasopressin receptor antagonists approved in the United States including Conivaptan and Tolvaptan. Conivaptan can only be given as a continuous infusion, however, Tolvaptan is orally available and can be given on a continuous basis as a daily therapy. The vasopressin receptor antagonists represent a new advance in the treatment of hypervolemic and euvolemic hyponatremia. A nephrology consultation should be obtained prior to instituting these drugs or in any case of moderate to severe hyponatremia because the consequences associated with either the lack of treatment or with rapid correction are severe and could lead to permanent neurological damage.

FOR MORE INFORMATION

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