FLUID AND ELECTROLYTE DISTURBANCE

COMPOSITION OF BODY FLUIDS AND MAINTENANCE FLUID THERAPY

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Abstract: *Holliday and Segar recommended the use of the maintenance intravenous fluids in children. This fluid contained sodium 30 mEq/L and was markedly hypotonic compared to plasma with sodium of 140 mEq/L. The resultant intravascular hyponatremia and the osmotic gradient can push fluid from the intravascular space into the intracellular space. In vital organ like brain, it can cause cellular swelling and neurological damage. Sick children both acute and non acute, have been found to have increased levels of anti-diuretic hormone secretion which reduces their ability to excrete water and can worsen the hyponatremia. The recent randomized controlled trials and guidelines recommend the use of maintenance intravenous fluids with a 0.9% sodium chloride to decrease the risk of hyponatremia and its adverse effects. Holliday and Segar recommended per day maintenance fluid rate based on daily caloric requirements of healthy children. In reality, caloric demands of sick children are much less than normal children and hence their daily fluid requirement will be much less. For sick children without dehydration hypotonic maintenance intravenous fluid at one half to two third of the standard maintenance rate per day is recommended.*

Keywords: *Children, Hyponatremia, Neurological damage, Maintenance intravenous fluid, Fluid rate.*

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Points to Remember

- ***Be aware of the risks of inappropriate hypotonic maintenance intravenous fluid.***
- ***Isotonic maintenance intravenous fluids similar to sodium concentration of plasma or its tonicity are recommended.***
- ***In non-dehydrated children, consider 0.9% sodium chloride in 5% dextrose or 0.45% sodium chloride in 5% dextrose at a reduced rate for maintenance intravenous fluids.***

(Acknowledgment: We thank Dr Vinodh Choudhury, Junior Consultant, Department of Pediatric Nephrology, Dr Mehta Multispecialty Pvt Ltd., for the assistance in collecting the references).

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