



**SREE BALAJI MEDICAL COLLEGE AND
HOSPITAL
CHROMEPET, CHENNAI.**



HANDBOOK ON IV FLUID THERAPY



Dr. SURESH KANNA

Dr. MATHISHA EBBY PERIN.R

DEPARTMENT OF GENERAL MEDICINE

SREE BALAJI MEDICAL COLLEGE,

CHROMEPET, CHENNAI-600044.

coagulation of the cells leading to release of vasoactive substances subsequently altering the haemodynamics of the body fluid leading to hypovolemia

Fluid resuscitation:

The commonly used regimen in these types of cases is called 'parkland regime' where the volume of fluid to be given is calculated as 4 ml percentage in proportion to the percentage of burn and body weight and is given over a period for twenty four hours. The percentage of fluid to be given is divided into 8 hours and the rest of the fluids is given over the remainder of 16 hours

'Muir and burclay' regime refers for usage of colloids for resuscitation over a period of twelve to twenty four hours and is divided into rations. Each ration is calculated based on the percentage of burns multiplied by the weight of the patient divided by two. Other regimens include the Galveston, modified brooke and evans formula. Commonly used fluid includes ringer lactate which is the most commonly preferred however for the first 24 hours crystalloids are preferred since they have the ability to permeate through the wall of the capillaries. After 24 hours upto the period of 2 days colloids are preferred to help to prevent loss of plasma and albumin is preferred in these types of cases. Normal saline can also be used in these cases and is calculated by multiplying 0.5 millimoles and the weight of patient and calculated percentage of burns over body surface. The preferred rate of fluid resuscitation for these cases tend to be in the range of 4 to 4.5ml/kg/hr. To assess the patients recovery and proper fluid correction urine output must be between 20 to 40 ml/hr.

CONGESTIVE HEART FAILURE

Congestive heart failure as discussed above occurs due to hyponatremia due to preceding retention of water and sodium extravascularly. An interesting course of treatment is that fluid resuscitation in these patients can be easily

established only through oral ingestion of fluids rather than parenteral or intravenous route. Sodium restriction and potassium deficit correction is part of the treatment. Treatment for reduced sodium levels is done through usage of ionotropes rather than addition of sodium rich fluids or addition of salt to prevent complications.

ACUTE RENAL FAILURE

Acute renal failure is one of the dreaded complications of inefficient fluid resuscitation so the general guidelines for management include restricting fluid intake which is calculated as the sum of the total urine output of the day and addition of 500ml. Addition of salt in diet is reduced to less than 3 grams per day. Patients with no azotaemic complications can be started on 500 to 1 liter normal saline intravenously over a period of a couple of hours and addition of loop diuretics like furosemide is warranted in cases to increase urine output. In cases of acute renal failure associated with highly reduced urine output 5% dextrose or 10% dextrose can be used.

HEPATIC FAILURE

The common condition pertaining to hepatic failure is ascitis commonly occurring after cirrhosis and in other conditions like fatty liver, alcoholic hepatitis and non alcoholic steato hepatitis. Fluid resuscitation is highly regulated in cases of ascitis and procedures such as paracentesis are done in a slow regularized rate so as to prevent electrolyte and fluid imbalance. Favorable fluids in these cases include 10% and 20% dextrose and dextrose normal saline. Ringer lactate resuscitation may induce alkalosis due to break down of its contents as bicarbonates in the liver and also impairs the lactate cycle. Isolyte G solution can also be given in certain conditions and have a higher chance of induction of hepatic encephalopathy. Common clinical features of

encephalopathy include asterix(flapping tremors),lethargy ,daytime fatigue and coma in refractory case.

FLUID THERAPY IN VOMITING

Fluid loss due to vomiting tends to lead to loss of H^+ Rich ions from the body and leads to a state of HCO_3^- excess causing metabolic alkalosis. The treatment consists of correction of the following induced alkalosis. Hypokalemia sets in due to loss of sodium from the vomitus which changes the aldosterone production leading to increased sodium reuptake. Treatment of the following include usage of isotonic saline which helps to establish fluid balance by increasing the level of extra cellular fluid and through decreasing amount of bicarbonate uptake,it also helps to correct the reduced chloride levels. Except potassium level correction isotonic saline helps to correct all other electrolyte deficits. Isolyte G is the preferred fluid for correction of vomitus induced metabolic alkalosis and preferably helps to correct potassium deficit too as compared to isotonic saline.

HEAD TRAUMA

It is an emergency procedure which warrants upkeep of hemostasis and normotensive state of patient during crisis .Since ages use of mannitol has been advocated in cases of increased intracranial tension since mannitol has the ability to absorb water through the blood brain barrier thereby reducing edema. Other indicated intravenous therapies include use of normal saline, however use of dextrose produces anaerobic breakdown of glucose leading to production of lactate which causes brain damage. Albumin and starch derivatives have very little influence over correcting cerebral edema.

CONCLUSION:

Treatment of each of the above mentioned cases require an individual based resuscitation rather a generalized approach directly out of a fluid manual, a single fluid such as a colloid or a crystalloid fails to cover and cure all aspects of hypovolemia. Crystalloid fluids are favored in cases of specifically resuscitation of fluid volume and thereby interstitial fluid levels and also remains cost effective whereas colloidal fluids help to increase the tissue oxygen perfusion rate and thereby the cardiac output. Considering all the aspects of property of fluids and the condition, specific requirement of the patient treatment fluid therapy to be started and maintained at an optimal rate.