Management & Treatment of Shock

The treatment of cardiogenic shock, septic shock, and hypovolemic shock include the administration of endogenous catecholamines (epinephrine, norepinephrine, and dopamine) as well as various vasopressor agents that have shown efficacy in the treatment of the various types of shock. In addition to the endogenous catecholamines, exogenous catecholamines like Dobutamine, isoproterenol, phenylephrine, and milrinone have served as the mainstays of shock therapy for several decades. Vasopressin, selepressin, calcium-sensitizing agents like levosimendan, cardiacspecific myosin activators like omecamtiv mecarbil (OM), istaroxime, and natriuretic peptides like nesiritide can enhance therapy when shock is especially complex.

Hypovolemic shock is usually the simplest form of shock to treat but many of its treatment strategies do not apply for the other types of shock. Thus, the therapy of shock, regardless of its etiology, demands a thorough knowledge of cardiovascular physiology and the pharmacology of the drugs that are used to treat its derangements.

Successful management of circulatory failure/shock aims to:

• Early recognition of the shock state.

• Correction of the initiating insult (defibrillation, antibiotics, hemostasis, IV fluids, surgical removal of necrotic tissue).

• Treatment of secondary consequences of shock (e.g., acidosis, hypoxemia).

• Maintenance of function of vital organs (e.g., cardiac output, B.P., urine output); and

• Identification and treatment of aggravating factors.

All the five factors must be handled concurrently. Hemodynamic and biochemical monitoring of the patients response to treatment is critical to success of the treatment and need repeated monitoring.

Restoration of blood volume: Since increased blood flow to vital organs increases the likelihood of survival, therapy should augment cardiac output. This is best achieved by restoring the intravascular blood volume as quickly as possible and may be the only treatment necessary, except in shock due to MI where the function of the heart itself is impaired. *Fluid administration should be monitored by* measurement of Central Venous Pressure and mean arterial BP. Rise in CVP without a corresponding rise in arterial blood pressure during IV fluid therapy denotes an overloading of the circulation. To avoid such overloading, CVP should be maintained below 15 cm of water.

Fluids used for volume replacement are: Whole blood and plasma, Colloidal plasma substitutes: Dextran, Hydroxyethyl starches, Polyvinylpyrrolidone and Oxypolygelatin. And Crystalloid plasma substitutes: Normal saline (sodium chloride solution) and 5% Dextrose solution