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Intra –Dialysis Complications among Hemodialysis Patients. - A Case Study

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ABSTRACT

Back ground: *Chronic Renal Failure (CRF) is the state which results permanent progressive reduction in renal function. In the developing countries the awareness and burden of CRF on society has been high lightened during Past decade years. The risk factors such as obesity, smoking, hypertension, uncontrolled diabetes mellitus favours the progress of renal failure among the old age population¹. Hemodialysis is a method that is used to achieve the extracorporeal removal of waste products such as creatinine and urea and free water from the blood when the kidneys are in a state of renal failure. The principle of Hemodialysis is the same as other methods of dialysis it involves diffusion of solutes across a semi permeable membrane. Hemodialysis utilizes counter current flow where the dialysate is flowing in the opposite direction to blood flow in the extracorporeal circuit. Counter-current flow maintains the concentration gradient across the membrane at a maximum and increases the efficiency of the dialysis. This case study survey was done to highlight the intra- dialysis complications faced during Hemodialysis procedure. The findings were analyzed and reported. The case report gives us the actual picture of dialysis complication and the causes underlying behind it².*

Key words: *Intra dialysis complications, Hypotension, Chills, Fever, Muscle cramps.*

INTRODUCTION

Renal disease is the most common causes of death and disability in many countries throughout the world. It is a common threat to critically ill patients in intensive care units with a mortality rate ranging from 42% to 88%. Although treatment methods such as dialysis and renal replacement methods are effective in correcting this life-threatening condition, however the mortality rate associated with acute renal failure has not changed substantially till 1960s³. This is probably because acute renal failure is seen more often in elderly patients, who are often superimposed with other co morbid, life-threatening conditions. Azotaemia is the most common indicator of acute renal failure, an accumulation of nitrogenous wastes in the blood⁴. Chronic renal failure is currently known as Chronic Kidney Disease (CKD) or Chronic Renal Insufficiency (CRI) implies long standing, progressive and irreversible renal parenchyma disease resulting in diminished renal function. Hemodialysis is the most common method used to treat advanced and permanent renal failure. Since the 1960s, in recent years more compact and simpler dialysis machines have made home dialysis increasingly attractive. But even with better procedures and equipment, Hemodialysis is still a complicated and inconvenient therapy that requires a coordinated effort from whole health care team, including nephrologists, dialysis nurse, dialysis technician, and dietitian. In Hemodialysis blood is allowed to flow, a few ounces at a time, through a special filter that removes wastes and extra fluids.

The clean blood is then returned to body. Removing the harmful wastes and extra salt and fluids helps control your blood pressure and keep the proper balance of chemicals like potassium and sodium in our body^{5,6}.

MATERIALS AND METHODS

The study was on process in Melmaruvathur Adhiparasakthi Institute of Medical Sciences, Melmaruvathur in the period of around 5 months from December 2013 to March 2014 in renal dialysis ward of Nephrology department. Proper oral consent was obtained by explaining the purpose of the study. Totally 50 subjects were included in the study. Patient Selection- Totally 50 patients of both the genders were selected by analyzing the stages of renal failure. Grade 4 renal failures, categories subjects and who are on regular Hemodialysis were included for the study. Analysis was done during their regular Hemodialysis session. Duration of Hemodialysis session was around four hours. Routine protocol such as weight measurement, blood pressure analysis, and heparin dosage according to access has been given. All the patients were in mid line of 3rd -5th usage of dialyzer and blood line. Blood flow was maintained between 175-250ml/minute. A framed questioner which was designed by mentioning the Hemodialysis complications are listed. Whole four hours the patient was in observation. Complications faced as been analyzed and reported.

INTRA –DIALYSIS COMPLICATIONS OBSERVED IN THE STUDY (n=50)

Intra dialysis complications	Percentage
1. Hypotension	(70-80%)
2. Muscle Cramps	(60-80%)
3. Disequilibrium Syndrome	(50-60%)
Nausea and Vomiting	(50%)
Headache	(50-60%)
Chest Pain	(45-50%)
Itching	(50%)
4.Fever and Chills	(40%)

DISCUSSION

INTRA DIALYSIS COMPLICATIONS AN INTERPRETATION:^{7,8,9,10}

A) Hypotension (70-80%): Is the most common complication faced during hemodialysis. Decreased systolic blood pressure by >20-30 mmhg from intra dialysis pressure mmhg from Predialysis pressure. Systolic blood pressure <100 mmhg. Causes for hypotension during Hemodialysis procedure is due to removing excess of weight more than the body ideal weight, anemia, hemorrhage, taking antihypertensive pills before dialysis, anaphylaxis, air embolism, eating/drinking during dialysis.

B) Muscle Cramps (60-80%): Painful muscles spasms are seen usually in extremities are associated with removal of large amounts of fluid, hypotension, imbalances in electrolytes level.

C) Disequilibrium syndrome (50-60%): Is defined as a set of systemic and neurologic symptoms that include nausea & vomiting, headache, Restlessness, Hypertension, Slurred Speech, Seizure and Coma. Causes for disequilibrium syndrome is due to slower transfer of urea from the brain tissue to the blood, fluid shift into the brain due to removal of wastes from the blood stream causing cerebral edema, rapid changes in serum electrolytes, especially in new patients with high blood flow rate.

D) Nausea and vomiting (50%) Is due to hypotension, uremia, and disequilibrium syndrome.

E) Headache (50-60%) Is due to hypertension, inaccurate dry weight with too much fluid removed inaccurate dry weight with too much fluid removed, rapid fluid or electrolyte shift disequilibrium syndrome, anxiety/ nervous tension anxiety/nervous tension, caffeine withdrawal.

F) Chest pain (45-50%) in the dialysis session is due to ischemia to heart muscle (coronary artery disease) anemia, hypotension from fluid depletion, hypovolemia, anxiety-stress, physical exertion, illness, and blood flow rate increases too rapidly on patient with known cardiac disease known cardiac disease.

G) Itching (50%) Is due to dry skin, secondary hyperparathyroidism secondary hyperparathyroidism, and abnormal levels of calcium, magnesium and phosphorus in tissues, allergies, uremia with elevated blood urea nitrogen.

H) Chills and fever (40%) Is due to infection or septicemia in the vascular access, respiratory illness, and patient has shaking/shivering without Pyrogenic reaction.

CONCLUSION

Common Problems and Complications faced during dialysis can be Monitored during the dialysis treatment is done to prevent detect and treat complications prevent detect and treat complications. Continuous monitoring and early detection can reduce and may even prevent problems and complications. The above listed complications are quiet common in Hemodialysis. The prevalence and severity of the complication depends upon the prognosis of disease. Low range blood flow, Proper dialysate fluid composition, Proper reuse of dialyzer and frequent change of dialyzer may decrease the occurrence of complication.

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