



INCIDENCE AND RISK FACTORS FOR DYSELECTROLYTAEMIAS IN THE FIRST 48 HOURS AFTER KIDNEY TRANSPLANTATION – A SINGLE CENTRE STUDY

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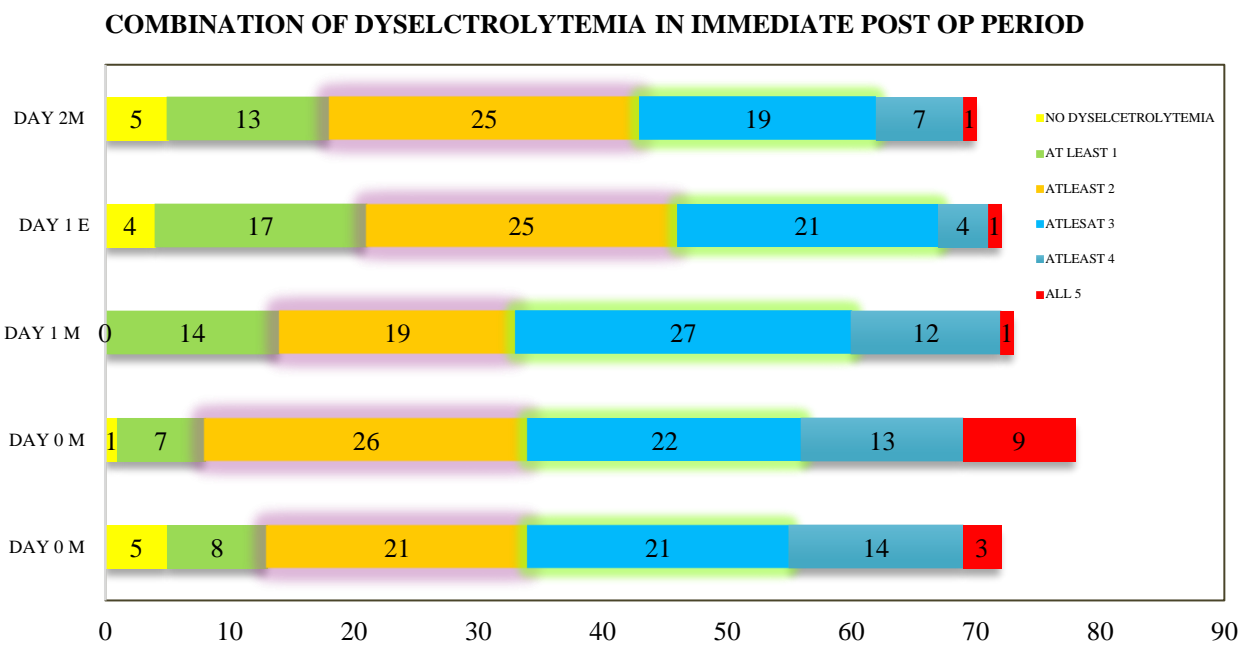
| INTRODUCTION |
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| <ul style="list-style-type: none">The peri-operative period of Kidney Transplantation (KT) is associated with significant changes in fluid and electrolyte status.In the first 48 hours after KT there is often brisk diuresis, large volumes of IV fluids are administered.Hyperglycemia appears to be universally prevalent in all patient which often necessitate insulin therapy & drugs like CNI are known to cause dyselectrolytaemia. |

| AIMS AND OBJECTIVES |
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| 1) To study the frequency of abnormalities in serum levels of sodium, potassium, calcium, magnesium, phosphorus in the first 48 hours after KT. |
| 2) To study the factors associated with Dyselectrolytaemia. |

| MATERIALS AND METHODOLOGY |
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| This was a Single Centre Retrospective case records-based study, which included data of patients who underwent KT between January 2020 and July 2023. Patient requiring HD/CRRT any form of RRT were excluded. |
| We studied the frequency and tried to identify the factors associated with dyselectrolytaemia in the first 48 hours after transplantation. |
| Electrolytes were assessed over 6 time points . |
| Pre OP, Immediate post OP, Day 0 evening, Day 1 Morning, Day 1 evening and Day 2 Morning. |
| Fluid and electrolyte management for patient was done by Institution fluid protocol |
| EQUAL PROTOCOL OF FLUIDS |
| For the first 6 hrs – replacement of hourly urine output with equal volume of IV fluids |
| REDUCTION PROTOCOL OF FLUIDS after 6 hrs |
| Fluid used – Normal Saline and D5% in ration of 2:1 |
| Reduction protocol |
| Urine Output > 2000 Minus 500ml = 1500ml |
| Urine Output 1500 – 2000 Minus -300 ml |
| Urine Output 1200 – 1500 Minus -200 ml |
| Urine Output 900 – 1200 Minus -100 ml |
| Urine Output 700 – 900 Equal |
| Urine Output 500 – 700 plus 100 ml |
| Urine Output less than 500 – Bolus 500ml + IV Lasix 20 mg |
| DAY 1 - If urine output of D0 is fine , 2/3 rd of Day 0 urine Output is administered on Day 1. |
| DAY 2 – Half of day 1 urine output. |
| Day 3 – usually 3-5 litres. |

| Characteristics | N=83 |
|-----------------------------------|--------------------|
| Gender | |
| Male | 68 (81.93%) |
| Female | 15 (18.07%) |
| Recipient mean age (yrs) ± (SD) | 32.12 ± 9.39 |
| Relationship with donor | |
| Deceased donor | 11 (13.26%) |
| Living donor | 72 (86.74%) |
| BASIC KIDNEY DISEASE | |
| SUSPECTED/ CLINICAL CGN=1 | 23 (28.75%) |
| IGA/ CRESCENTIC GN=2 | 12 (15%) |
| OBSTRUCTIVE UROPATHY/ STONES | 7 (8.75%) |
| DISEASE = 3 | |
| CKDu =4 | 22 (27.5%) |
| CTID =5 | 6 (7.5%) |
| CAKUT/SOLITARY=6 | 4 (5%) |
| DKD=7 | 1 (1.25%) |
| Others = 8 (HTN / Cystic kidney) | 5 (6.25%) |

| RESULTS |
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| <ul style="list-style-type: none">The study includes 82 KT patients with an average age of 31.9 ± 9.37 years at the transplant.81.7% were male, and 84.1 % were from living kidney donors. The most common cause of CKD was CGN (30.5%), followed by CKDu (25.6%).The average urine output was 12253 (±5851) on day 0.Hypomagnesaemia (71.4%), hypocalcaemia (79.8%), hyponatraemia (45.2%), hypophosphataemia (22.4%), hypokalaemia (36.6%) & hyperkalaemia (15.9%) were the most encountered abnormalities and most of them persisted at 72 hours.The incidence of hyponatraemia, hypokalaemia, hypophosphataemia, hypocalcaemia and hypomagnesaemia correlated with the urine volume in the first 48 hours and the volume of IVF administered |



| Electrolyte imbalance | Day 0 | Day 0 Eve | Day 1 M | Day 2 Eve | Day 2 |
|-----------------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Absence of dyselctrolytemia | 5(6.94%) | 1(1.28%) | 0 | 4 9(5.56%) | 5(7.14%) |
| At least 1 | 8(11.11%) | 7(8.97%) | 14 (19.19 %) | 17(23.61%) | 13(18.57%) |
| Combination of 2 | 21(29.17%) | 26(33.33%) | 19(26.03%) | 25(34.72%) | 25(35.71%) |
| Combination of 3 | 21(29.17%) | 22(28.31%) | 27(36.99%) | 21(29.17%) | 19(27.14%) |
| Combination of 4 | 14(19.44%) | 13(16.6%) | 12(16.44%) | 4(5.56%) | 7(10.0%) |
| Combination of 5 | 3(4.17%) | 19(11.5%) | 1(1.37 %) | 1(1.39%) | 1(1.43%) |

| Mean electrolyte levels at different time point | | | | | | |
|---|------------|-------------------|------------|------------|------------|-------------|
| Electrolytes | Pre op | Immediate Post Op | Day 0 Eve | Day 1 Morn | Day 1 Eve | Day 2 Morn |
| Sodium (mEq/L) | 135.9±3.57 | 133.96±3.78 | 133.9±3.66 | 134.7±3.2 | 134.97±3.3 | 135.16±2.79 |
| Potassium (mEq/L) | 4.43±0.66 | 4.25±0.8 | 3.7±0.68 | 4.08±0.65 | 4.21±0.62 | 4.25±0.48 |
| Magnesium (mEq/L) | 2.45±0.53 | 1.72±0.35 | 1.68±0.3 | 1.66±0.47 | 1.69±0.4 | 1.66±0.32 |
| Calcium (mEq/L) | 9.23±1.1 | 8.27±0.87 | 7.9±0.73 | 7.93±1.0 | 8.21±0.71 | 8.32 ±0.75 |
| Phosphorous (mEq/L) | 4.55±1.5% | 3.2±1.05 | 2.88±1.13 | 3.09±0.95 | 3.17±0.97 | 2.95±0.99 |
| Creatinine (mg/dl) | - | 5.08±1.48 | 3.62±1.46 | 2.42±1.16 | 1.83±1.05 | 1.44±0.95 |
| Urine Output (ml) | | 11907±6370 | 12128±6178 | 8326±4010 | 7955±4028 | 5757±2668 |

| CONCLUSION |
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| <ul style="list-style-type: none">Dyselectrolytaemia is very common in the early postoperative period after kidney transplantation and is related to the graft functionCombination of 2 or 3 electrolytes is a common finding seen in majority of our patients.Knowing the Electrolyte imbalance, properties of IV fluids available, best IV fluids can be selected. |



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| For Tables and Charts please Scan here |
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