

### 3 Month Data Study of Serum Sodium, Potassium & Creatinine Levels & Its Relation To Diagnosis in Clinical Biochemistry Laboratory of Iggmc, Nagpur



### Medical Science

KEYWORDS : So KFT values have both diagnostic & prognostic importance.

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### ABSTRACT

*Kidney function test is vary important investigation in clinical biochemistry. Its has a both diagnostic & prognostic importance. In KFT, Sr.creatinine & Na-K Values are studied in different disease.*

*3 Month data study from Jan-March 2013 is carried out in clinical Biochemistry Dept. IGGMC. Nagpur.*

*RESULT:- In sever & Chronic disease like IHD,HTN, Cellulitis, CKD & Various other diseases & in emergency disease like O.P. Poisoning, Snake Bite, M.I. Value are abnormal.*

### INTRODUCTION :-

There are different types of routine investigation performed daily in our laboratory. Serum electrolytes & serum creatinine are few these investigation. Sodium is the major cation of extracellular fluid. Serum sodium levels plays a central role in maintaining normal distribution of water & osmotic pressure in the extracellular fluid compartment. Daily dietary sodium (3-6 gms) is nearly completely absorbed from gastrointestinal tract. The body requires only 1-2 mmol/dL & the excess is excreted by the kidneys. Which are the ultimate regulators of the amount of sodium & thus water in the body. The reference value for serum sodium is 135-148 mEq/L (EasyLyte electrolyte analyzer)

Potassium is the major intracellular cation. High intracellular concentration are maintained by the Na-K adenosine tri phosphate (ATP) pump, which is fueled by oxidative energy & continually transport potassium into the cell against concentration gradient. This pump is critical factor in maintaining & adjusting the ionic gradient on which nerve impulse transmission & contractility of muscle depend. Average dietary intake is 2.4-4.4 gm/d. Potassium rapidly absorbed from GIT is rapidly distributed, with small amount taken up by cells & most excreted by the kidneys. Reference levels for serum of adults 3.5 – 5.3 mEq/L ( EasyLyte electrolyte analyzer )

Creatinine is a metabolite of creatine, an important component of muscle excreted exclusively by the kidney. Creatinine is present in all body fluid & secretion & is freely filtered by the glomerulus. It is not reabsorbed to a great extent by the renal tubules. Reference levels for serum creatinine in a adult by Jaffe's method is 0.4-1.4 mg/dl. This study will detect percentage of abnormal levels of electrolyte & creatinine in different disease. This may provide an idea about the prevalence of diseases resulting in deranged kidney function in this region.

Normal diet contain 5-10 gm sodium mainly sodium chloride.

The same amount of sodium daily excreted through urine.

The interrelationship between renin angiotensin and aldosterol play an important role in the reabsorption. In essence aldosterol & AD work in tandem to maintain normal fluid and electrolyte balance.

### AIMS & OBJECTIVES:-

To study the abnormalities in the serum sodium, potassium and creatinine levels from Jan 2013 to March 2013.

to correlate the abnormalities in the serum, potassium & creatinine levels with the organ system involved.

### MATERIAL & METHODS:-

The present study is a retrospective data study of data IPD and emergency samples for serum sodium, potassium and creatinine over 3 month period from January 2013 to March 2013.

The study protocol was approved by the Ethical Committee of the institute.

### SOURCE OF DATA:

As this is a data study all data of serum sodium, potassium & creatinine levels obtained from Jan 2013-March 2013 will be included in the study.

### METHODOLOGY :-

Serum sodium & potassium levels estimation-by EasyLyte plus Na<sup>+</sup>/K<sup>+</sup>/Cl<sup>-</sup> electrolyte analyzer.

Serum creatinine estimation- Sr Creatinine by auto analyzer XL-640 with kit based on jaffe's method.

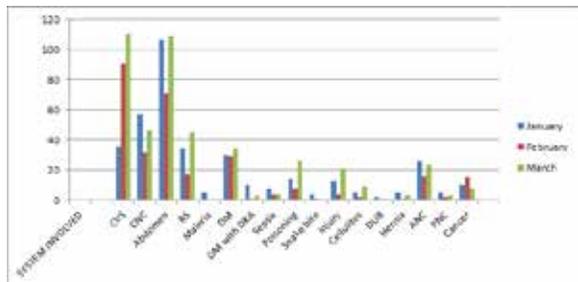
### RESULT & OBSERVATION:-

This study will detect percentage of abnormal levels of electrolyte & creatinine in different disease. This may provide an idea

about the prevalence of disease resulting in deranged kidney function in this region.

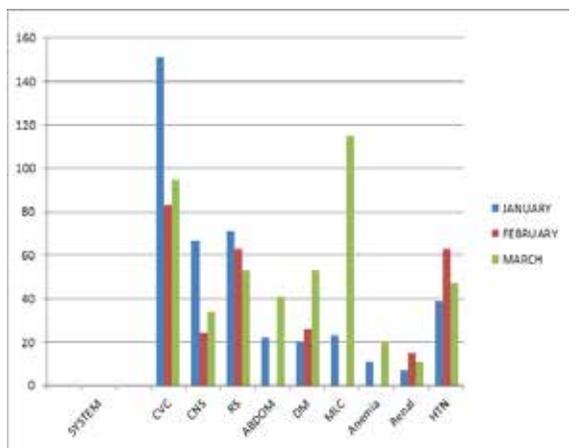
**TABLE NO 1:- NUMBER OF INWARD DEPARTMENT PETIENT ACCORDING TO DIFFERENT SYSTEM INVOLVED OVER 3 MONTH PERIOD.**

SYSTEM INVOLVED	JANU-ARY	FEBRU-ARY	MARCH	TOTAL
CVS	39	91	110	240
CNC	57	32	46	135
Abdomen	107	71	109	287
RS	34	17	45	96
Malaria	05	00	01	06
DM	30	29	34	93
DM with DKA	10	01	03	14
Sepsis	08	04	04	16
Poisoning	14	08	26	48
Snake bite	04	01	00	05
Injury	13	04	21	38
Cellulites	05	02	09	16
DUB	02	01	01	04
Hernia	05	01	03	09
ANC	26	16	23	65
PNC	05	02	03	10
Cancer	10	15	08	33
				1115



**TABLE NO 2 :- TOTAL NUMBER OF EMERGENCY DEPARTMENT PETIENTS ACCORDING TO DIFFERENT SYSTEM INVOLVED OVER 3 MONTH PERIOD.**

SYSTEM	JANUARY	FEBRU-ARY	MARCH	TOTAL
CVC	151	83	95	329
CNS	67	24	34	125
RS	71	63	53	187
ABDOM	22	00	41	63
DM	20	26	53	46
MLC	23	00	115	23
Anemia	11	00	20	11
Renal	07	15	11	22
HTN	39	63	47	149



**TABLE NO 3:- TOTAL NUMBER OF ABNORMAL SODIUM,POTASSIUM &CREATININE LEVELS IN IPD & EMERGENCY OVER 3 MONTH PERIOD**

	JANUARY		FEBRUARY		MARCH	
	IPD	EMER-GENCY	IPD	EMER-GENCY	IPD	EMER-GENCY
CRE-AT	120	165 (1045)	73	305 (948)	103	179 (890)
SO-DIUM	233	535(Ab) (1044)	146	570(Ab) (942)	148	462(Ab) (1046)
PO-TAS-SIUM	107	535 (Ab) (1044)	61	570(Ab) (942)	125	462 (Ab) (1046)

( ) Indicate total and (Ab) indicate abnormal.

**DISCUSSION :-**

Most of indoor patient value abnormal. There is variation in value in different disease. It is observed that, KFT Value are abnormal in which major system like CVS,CNS, GIT are affected. Highest creatinine > 5 mg is seen in disease like cellulitis HTN, poisoning, Anemia, CKD, perforation peritonitis, Unstable Angina, Ascites, RHD complicated malaria, IHD.

High creatinine <5 mg is seen in AWMI, COAD, Cirrhosis, systemic HTN with IHD, Burns, CVE ARDS, snake bite, Pulmonary T.B. So in chronic & sever disease where brain , kidney & Cardiac system's damages occurs sr creatinine increase significantly.

In renal disease & in anemia, electrolyte imbalance is seen. In cellulites also increase creatinine & electrolyte imbalance is seen. In each month, approximately 1000 sample for sr.creatinine & electrolyte is processing in clinical biochemistry laboratory. Abnormal values of KFT are helpful for diagnostic & prognostic purpose.

**CONCLUSION :-**

In majority of sever chronic disease & in emergency disease like CKD, IHD, O.P. Poisoning, KFT value are abnormal. It is vary sensitive test. In emergency it is vary useful for treatment purpose.

KFT in vary important investigation for diagnostic & prognostic purpose.

**REFERENCE:-**

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- (2) Page No 411 textbook of biochemistry for medical student. D.M. Vasudevan Shreekumaris Kannar Vaidyanathan
- (3) EasyLyte Electrolyte analyzer transania booklet..