MATERIAL & METHODS
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Material:

For the present study cases were chosen from OPDs and wards of Department of Medicine of MLB Medical College & Hospital, Jhansi during a period of 26 Sep 2002 to 15 Nov 2003.

Grouping of cases:

Group A - Normal healthy controls (10 cases)

Group B -
(1) CRF patients on conservative management (30 cases)

(2) CRF patient on hemodialysis (10 cases)

Group A → Normal healthy controls (10) for this patients of different age and sex groups were taken and detailed history was taken about renal symptoms, drug intake such as iodides, steroids etc. a detailed clinical examination was done to exclude other diseases.

Group IIa :-

CRF patient on conservative management (30) :-

Chronic renal failure patients on conservative medical treatment who have never undergone hemodialysis or peritoneal dialysis and are maintained only on drugs were taken in this group.

Group IIb :-

CRF patient on hemodialysis (10)

In this group those patient of CRF who required hemodialysis were chosen.
Methods:

All the cases were subjected to thorough clinical history taking and clinical examination as per proforma:

**Working proforma**

- Name
- A/S
- Occupation
- Address

**History**

- H/O any symptoms pertaining to hypothyroidism eg. Intolerance to cold.
- Urinary symptoms including to those of obstructive uropathy, UTI.
- H/o joint pain
- Menstrual abnormality
- Treatment history about steroids, iodine, OCPs.
- H/o pain abdomen, fever.

**EXAMINATION**

*General examination* :-

- GC
- PR
- RR
• BP
• Temp.
• JVP
• Skin texture
• Pedal edema
• Any swelling over neck.
• Lymphadenopathy

*Systemic examination* :-

• Cardiovascular system
• Respiratory system
• Gastrointestinal ilea
• Genito urinary system
  (any renal lump or tenderness of renal angle)
• Central nervous system

*Investigations* :-

• Hb%
• TLC
• DLC
• ESR
• B. Sugar
• B. Urea
• S. creatinine
• Urine routine & microbiological examination
Special investigation:-

1. Ultrasound – whole abdomen (with special reference to KUB)

2. Thyroid function test T3, T4 and TSH

In the present study thyroid function (T3, T4 & TSH) were done by chemiluminescence immunoassay (CLI). Chemiluminescence immunoassay uses chemiluminescence generating molecules as labels, such as luminol derivatives, acridinium esters or hitrophenyl oxalates derivatives, reagents required for reaction that produces chemiluminescence may be coupled to antibodies or antigens and used as labels for immunoassay.

Light generation of luminol derivatives requires OH⁻ & H₂O₂ as a chemical trigger or H₂O₂ with peroxidase as enhanced chemiluminescence triggers.

Acridinium esters chemically triggered with OH⁻/H₂O₂ display a relatively high chemiluminiscent quantum yield for light emission compared with luminol.

Chemiluminiscent molecules exploited as labels include luminol, isoluminol, acridinium esters, thioesters and sulfonamides and phenathridinium esters.

Chemiluminiscent immunoassay using acridinium esters as labels:-

In this method (Weeks 1983), acridinium esters are directly conjugated with protein molecule. Acridinium esters can oxidatively react with H₂O₂ under low pH condition to produce light energy intermediaters that
decompose to the excited fragment, generating light. The rate of light emission of acridinium esters in extremely faster within 5 to 10 seconds after the initiation of the oxidation reactions.

Flash type CLI, as this process is referred to, has a much sleeper spectrum of light emission to reactive time than glow type CLI triggered by enzymes.

Since 1983 chemiluminiscence methods have been developed for many enzymes labels eg. Alkaline phosphatase, glucose-6-phosphotase dehydrgenase, horseradish peroxidase and xanthine oxidase, because methods based on chemiluminiscence have very low detection limits, they have the potential to replace assay that currently employ radioisotopes as labels and for last decade they have emerged as a major tool for biochemical and biological studies.
To date isoluminal derivative have been most widely used.

Currently the most successful enzymes assays are the enhanced CL method for a peroxidase label involving a mixture of luminol, hydrogen peroxidase and an enhancer (eg, P-iodophenol) and the direct CL method for alkaline phosphatase, with an adamantyl 1,2-dioxetane phenyl phosphate as substrate.

In addition to advantage of sensitivity and real time, non invasive nature of this detection system, the imaging potential of using low light and photon counting video cameras has been particularly influential in establishing its ascendance over more traditional system.

**Advantage of CL includes :-**

- Precision and high sensitivity can measure upto picogram ($10^{-12}$ gm) quantities.
- Speed (signal generated in 5-10 second and in some cases stable for several hours)
- Non-hazardous reagents
- Simple procedure

Normal values of various parameters taken into consideration during this study are as follows :-

- Serum T3 $\rightarrow$ 70-90 ng/dl
- Serum T4 $\rightarrow$ 5.12 µg/dl
- Serum TSH $\rightarrow$ 0.4-5 µu/ml
- Serum creatinine $\rightarrow$ 1.5 mg/dl