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Children and Young Adults Comprise Around 20-30 Per Cent of Kidney Patients in the City Vizag Andhra Pradesh A Facility Based Study

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Abstract: Children and young adults comprise around 20-30 per cent of kidney patients in the city, say doctors from various hospitals. Andhra Pradesh (AP) is one of the biggest states in India. A.P is 8.4% out of India's total geographical area and 7.1% of population, ranking fourth in terms of geographical area and fifth in terms of population among the Indian states. A facility based, cross-sectional academic and OPD medical centers in NRI Institute of medical sciences participated in the study. A structured questionnaire was developed and pre-tested in the pilot study of 500 subjects carried out at one center in South India. 5% of the subjects with CKD were aware that they have CKD, while 12% of those with proteinuria reported knowing that they had protein in the urine.

Keywords: CKD, Vizag, Diabetes, Hypertension and proteinuria.

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I. INTRODUCTION

Children and young adults comprise around 20-30 per cent of kidney patients in the city, say doctors from various hospitals. Besides congenital abnormalities, changes in lifestyle, food habits, infections and consanguineous marriages of parents have been attributed to renal problems in children.While doctors are seeing patients who are as young as five-year-old, adolescents of 14-15 years and young adults in their 20s and 30s, in most cases of late detection and end stage renal failure, dialysis and transplant turn out to be the only options to save the lives of such patients. At King George Hospital (KGH), around 20% kidney patients are children and the causes are both congenital and infections, averred Dr G Prasad, nephrologist from KGH. Stating that 10-20% are pediatric kidney patients in the age group of 5-15 years, Dr P Sriram Naveen, consultant nephrologist from Mysore Hospital said, "The main reasons are congenital abnormality of the kidneys by birth. It may happen if the mother-to-be is mal-nutritioned or taking certain drugs without medical consultation and also due to trauma and viral infection during pregnancy, which can affect the foetus. Also if the parents are close relatives like first cousins (consanguineous marriage), it automatically enhances the risk factor for kidney ailments in children. Another reason for kidney ailments is leakage of protein from urine, which affects the filtration activity and eventually damages the kidney."Dr AV Venugopal, senior consultant nephrologist at Care Hospital added, "In young adults, IgA nephropathy is one of the causes for kidney ailments. IgA occurs when the antibody immunoglobulin A (IgA) settles in the kidneys. This results in local inflammation that in the long run obstruct the kidneys' ability to filter waste products.[1]

II. DISTRICT PROFILE

Andhra Pradesh (AP) is one of the biggest states in India. A.P is 8.4% out of India's total geographical area and 7.1% of population, ranking fourth in terms of geographical area and fifth in terms of population among the Indian states. It is India's fourth largest state by area and fifth largest by population. Its capital and largest city by population is Hyderabad. The density of population at 308 per square km is lower than the density 382 at all-India level.[2] Together, the population belonging to disadvantaged castes and minority communities accounts to about one-third of the state population. About one-third of 137 the state population is living in urban areas and the rest is in the rural areas of the state. Andhra Pradesh is predominantly agricultural, with more than three fourths of its workforce engaged directly in agriculture sector (CESS, 2012)178 . Andhra Pradesh is situated at the southeastern coast of India. It had spread with 23 districts; see the map of Andhra Pradesh.[3] Visakhapatnam District is one of the North Eastern Coastal districts of Andhra Pradesh and it

lies between 17o - 15' and 18o-32' Northern latitude and 18o - 54' and 83o - 30' in Eastern longitude. It is bounded on the North partly by the Orissa State and partly by Vizag District, on the South by East Godavari District, on the West by Orissa State and on the East by Bay of Bengal.[4]

Though a minority of CKD patients reach ESKD (0.15–0.20%/year over next 10–25 years), this population is 10–100 times vulnerable for cardiovascular (CV) events. Therefore, it is important to identify them and have preventive strategy for CV events in place. Should screening be universal or targeted to high-risk groups? (i.e. diabetics, hypertensives, CVD patients and those with family h/o renal disease etc[5] It is a known fact that over 50% of diabetics and hypertensives are not aware that they are harboring the disease, therefore if we target the high risk population than only half the patients are likely to be missed; hence some researchers advocate universal screening. But keeping the economics in mind even for developed countries universal screening is not cost-effective, therefore, it may be prudent to have targeted screening for CKD. But whatever policy one follows, there is little doubt about that there is an urgent need to have appropriate social and political strategy for prevention of CKD.[6]

III. INDENTATIONS AND EQUATIONS

A facility based, cross-sectional academic and OPD medical centers in NRI Institute of medical sciences participated in the study under the name of "Mission for justifying the burden." Any male and female with age over 18 years are eligible to participate in the screenin345 number of subjects were selected . It was conducted between March 2017 to May2017, coordinated from NRI institute of medical sciences and approval from the ethical committee after taking the consent from the subject. Signed or verbal informed consent (confirmed by a witness) was obtained before administering the questionnaire, taking measurements or blood collection.

IV. QUESTIONNAIRE

A structured questionnaire was developed and pre-tested in the pilot study of 500 subjects carried out at one center in South India (Additional file 1). The questionnaire was translated into local languages with the help of social worker and simultaneously results were interpreted by local statician . The questionnaire was generally administered by non-medical staff /volunteers who were trained by the SEEK-India team in interviewing techniques. At every site, staff was trained in interview techniques and measurement of height, weight and blood pressure by organizing a half day workshop prior to the camp. A team of nephrologists, nurses, technicians and trained interviewers participated in the camps. Questionnaires collected from the field were reviewed by the local site principal investigator and data entry was carried out locally.[7]

V. ANTHROPOMETRIC MEASURES

Body mass index (BMI) was calculated using the formula "weight (Kg) / height (m2)." The waist to hip circumference ratio (WHR) was calculated by using the waist circumference at the narrowest circumference between the lower costal margin and the iliac crest. Hip circumference was measured at the maximum circumference at the level of the femoral trochanters.[8]

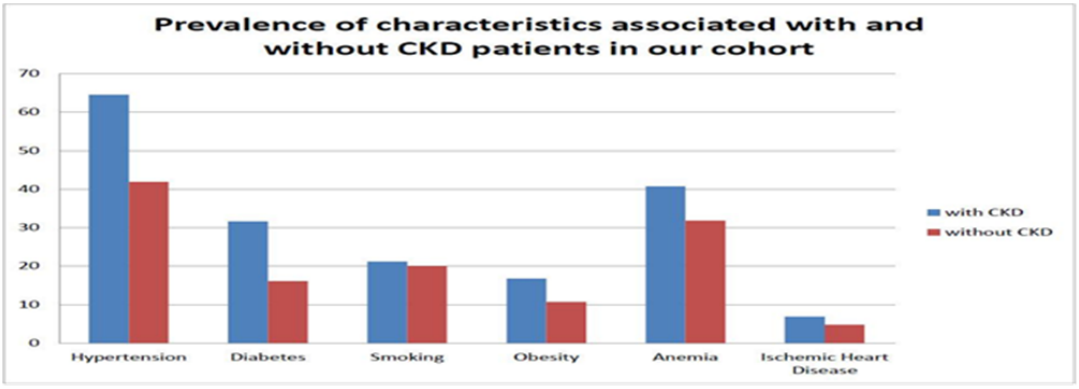
VI. BLOOD PRESSURE MEASUREMENT

In order to get a standardized blood pressure (BP) measurement, a protocol per American Heart Association guidelines [9] and a power-point presentation was provided to the centers, and staff training was carried out prior to camps. Systolic blood pressure (SBP) was based on the 1st Korotkoff phase and diastolic (DBP) on the 5th Korotkoff phase. Mercury sphygmomanometer was used after checking for zero error. BP was recorded inthe sitting position in the right arm supported at heart level, to the nearest 2 mm using mercury sphygmomanometer. An average of two readings was taken into consideration.

VII. BLOOD AND URINE SAMPLE COLLECTION

Random blood samples were collected. Blood was sent to a central laboratory. Quality control for temperature transporting specimens was checked and confirmed; i.e., 4–9 degree Celsius. Serum creatinine was measured using Jaffe Colorimetric method on a Roche Hitachi 912 analyzer. The instrument was calibrated (external calibration) using the Cleveland Clinic Foundation (CCF) creatinine panel. Regression analysis was carried out to calculate a formula to convert creatinine values obtained at the SRL-Ranbaxy laboratory (SRL) to the CCF values as follows: CCF creatinine $= -0.13 + \text{SRL creatinine} * 0.99$. Urine protein was detected by dipstick

FIGURES AND TABLES



VIII. DISSCUSSION

In the study group, 87% of patients had pallor, 9% of patients had petechiae and ecchymosis, and 12% of patients had red and white lesion. In the control group, 13% of patients had pallor, 2% of patients had red and white lesions, and 12% of patients had enamel hypoplasia. (8) Agrawal et al performed a community-based study to determine the prevalence of CKD in the South Zones of Delhi. They used the multi-stage cluster sampling method in recruiting their subjects. They defined "renal failure" as a serum creatinine >1.8 mg/dL and reported a prevalence of CKD of 0.79%. However, those subjects with positive proteinuria (by dipstick test) constituted 4.4% of their population and were not included in their definition of CKD.(9) Increased prevalence of CKD could be partly explained by the high prevalence of risk factors like diabetes and hypertension in the screened population (18.8% and 431.1%, respectively). The prevalence of diabetes and hypertension in India varied widely in many studies and ranged from 6-20% and 13-58%, respectively . (10,11)Among the CKD group, 64.5% had hypertension and 31.6% had diabetes mellitus. Self reported kidney stones disease was observed in 4.5%.

IX. CONCLUSION

Thus, this study attempts to highlight that one in every twenty individuals is suffering from CKD. There is a strikingly increasing prevalence of life-style diseases such as hypertension and obesity in the villages and there is a tendency for the younger people to be affected with these diseases. There is a dismally low awareness of CKD as well as hypertension. This study thus emphasizes the enormous proportion of morbidity that is likely to unfold in the coming years in India as CKD implies the twin burden of end stage renal disease as well as increased cardiovascular morbidity. Studies should also be designed that look at the probable causal role of kidney specific risk factors such as non-steroidal anti-inflammatory drug use, influence of herbal medicine and environmental toxins in these areas. For any study on the prevalence of diseases to be meaningful, there is a need to follow-up the population with preventive strategies and to stem further increase in the prevalence by regular surveillance. This will be the direction of our future involvement in this area.

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