

Chronic Kidney Diseases of Unknown Etiology (CKDu) Hot Spot at Narsinghpur and Badamba Blocks in Costal Districts of Odisha, India

Sir,

Multiple hot pockets of chronic kidney disease of unknown etiology (CKDu) have been reported from all over the world including India. The Narsinghpur and Badamba blocks of Cuttack district of the Odisha, India have been in the news for increasing reported cases of CKD since 2010. Till date, no systematic study has been undertaken; hence no published data is available.

Here, we present two visits reports conducted to the affected blocks and high CKD reported villages in the year 2015 and 2019. After collecting CKD and death data from state authorities of both blocks, here we document their cluster distribution like CKDu. Persistent creatinine of more than 1.4 mg/dl or those diagnosed as CKD by nephrologists were defined as CKD. During the visit, cases were partially confirmed from the respective villages.

Data from Narsinghpur block, with nearby 33 Gram Panchayats comprising of 236 villages having total population of 172119 were analyzed. As per record in the year 2015, there were total of 871 kidney cases and 286 deaths reported since 2010. A total of 21 panchayat were worst affected with a range of CKD cases in a single village reported from 16 to 81. The major affected villages are Phulapada (81 cases) and Paikbarabati (79 cases). In Badamba block, data was reported from nearby 36 Gram Panchayats with a total population of 163588. Till December 2018, there were a total of 215 Kidney cases and 162 deaths recorded since 2010. A total 10 panchayat were worst affected with a range of cases from 10 to 45. The major affected villages are Beliapal (43), Rathapat (25) and Kharada (24 cases) [Table 1]. Water testing for heavy metal estimation (Cadmium, Lead, Fluoride, Magnesium, Iron, Calcium, Chloride) was done from 10 highly affected villages from both the blocks. It was found that Lead

levels were higher than the normal limits in majority of the affected villages (mean \pm SD - 40 ± 16.4 microgm/L vs upper normal value 10 microgm/L) and Cadmium were high in 50% of the villages (mean \pm SD - 3.8 ± 1.6 vs upper normal value 3 microgm/L). This is in contrast to study published from regions of Srikakulam district and Chimakurthy mandal in the Prakasham district of Andhra Pradesh, India where levels were below upper limit of normal.^[1] Further we performed kidney biopsy in six patients. All biopsies were suggestive of chronic interstitial nephritis with significant interstitial fibrosis and tubular atrophy which is in consistency with the biopsy findings of Srilanka.^[2] None of the biopsy on immunohistochemistry showed significant immunoglobulin or complement deposits.

During second visit in January 2019, six villages in Narsinghpur block and six villages in Badamba block have reported more than 20 cases. This is in contrast with the 99 villages in Narsinghpur block and 74 villages in Badamba block, which have reported less than 5 cases in last five years. Considering pooled data from January 2013 to December 2018, in Narsinghpur block villages, the highest to lowest percentage of CKD (% of CKD per population) reported villages are Durgaprasad (6.9%), Routabhuin (6.2%), Bagadharia (5.5%), Phulapada (5.2%), Kendupalli (3.5%), Pakpadapatna (2.1%). In contrast, less than five cases in 99 villages (0.3%) six to ten cases in 36 villages (0.9%) and eleven to twenty cases in 26 villages (1%) have been reported from Narsinghpur block village, respectively. In Badamba block, highest to lowest percentage of CKD (% of CKD per population) reported villages are Ratapat (3.5%), Jainisahi (2.5%), Dasarathipur, (2.5%), Sasanga (2.1%) Karadi bandha, (1.5%) Jhajiia (1.4%). In contrast, less than five

Table 1: Percentage of reported CKD cases distribution and Deaths of Narsinghpur and Badamba Block in 2015

Narsinghpur Block					Badamba Block				
No. of villages	Population	Case detected	% CKD	Death	No. of villages	Population	Case detected	% CKD	Death
99	94503	<5	0.3%	116	74	80122	<5	0.27%	15
36	33434	6-10	0.9%	102	13	20085	6-10	0.45%	7
26	41404	11-20	1%	138	6	7497	11-20	1.04%	5
1	3942	83	2.1%	42	1	2049	29	1.42%	2
1	609	21	3.4%	5	1	1432	22	1.54%	1
1	987	51	5.1%	14	1	1050	22	2.10%	0
1	923	51	5.5%	14	1	1142	28	2.45%	6
1	552	34	6.1%	6	1	845	21	2.49%	2
1	553	38	6.9%	9	1	1312	46	3.51%	8

Clustering of CKD cases: Number of villages with more than 20 cases depicted individually and villages with less than 20 cases are clubbed together

cases have been reported in 77 villages (0.3%), six to ten cases in 13 villages (0.5%) and eleven to twenty cases in 6 villages (1%), respectively. Clustering of cases and variable number of deaths were persistent during second visit in both the blocks.

With respect to Indian perspective, many hot pockets of CKDu have been reported in a clustering manner but till date only one prevalence study has been published in literature.^[3] It is high time that India should focus on improving and standardizing death reporting. Our report is one of the passive data which will help towards formulation of systemic study in the reported area as proposed by the international community.^[4] The major limitation of this data is the non-availability of etiology of CKD like Diabetes, hypertension, family history of CKD, and non-reporting of urine examination findings. Hence clustering of cases of CKD cannot be attributed to only CKDu.

This is first report to document time varying clustering of CKD cases in certain villages of Narasinghpur and Badamba blocks which can be a potential hot spot for CKDu, which needs future investigation focusing multifactorial or novel risks factors for establishing its etiology.

Informed consent

Informed consent was obtained from all individual participants.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given his consent for his images and other clinical information to be reported in the journal. The patient understands that name and initials will not be published and due efforts will be made to conceal the identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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References

1. Reddy DV, Gunasekar A. Chronic kidney disease in two coastal districts of Andhra Pradesh, India: Role of drinking water. *Environ Geochem Health* 2013;35:439-54.
2. Weaver VM, Fadrowski JJ, Jaar BG. Global dimensions of chronic kidney disease of unknown etiology (CKDu): A modern era environmental and/or occupational nephropathy? *BMC Nephrol* 2015;16:145.
3. Tatapudi RR, Rentala S, Gullipalli P, Komaraju AL, Singh AK, Tatapudi VS, *et al.* High prevalence of CKD of unknown etiology in Uddanam, India. *Kidney Int Rep* 2019;4:380-9.
4. Caplin B, Jakobsson K, Glaser J, Nitsch D, Jha V, Singh A, *et al.* International collaboration for the epidemiology of eGFR in low and middle income populations-rationale and core protocol for the disadvantaged populations eGFR epidemiology study (DEGREE). *BMC Nephrol* 2017;18:1

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