

# Clinical profile of Cholera cases in Yavatmal District, Maharashtra

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**Introduction-** Outbreak of Cholera still remains major public health problem in most of the developing countries including India. Clinical profile of cholera was studied in Patients attending tertiary care hospital situated in tribal area of Central India, Yavatmal.

**Methods:** Type of study- Descriptive cross-sectional. Study Duration - 2 months (June - July 2012). Study setting- Inpatient Department of S. V. N. Govt. Medical College, Yavatmal (Maharashtra). Study subjects- All cholera patients attending S. V. N. Govt. Medical College Yavatmal (Maharashtra) with the complaints of acute watery diarrhoea. Study variables- Detailed clinical profile of these cases was noted along with other relevant environmental history.

**Results-** Out of a total 377 cases of acute watery diarrhoea, 13 isolates were positive for cholera. All the isolates were *V. cholera* O1 biotype El Tor serotype Ogawa. 46.2% of cases were below 5 years of age, the two youngest children being 1.5 years old. Both the sexes were equally affected. 61.5% cases had duration of diarrhoea more than 24 hours. Overall living and hygienic conditions of all the patients were poor. However all patients responded to intravenous fluids, oral rehydration and antibiotics (Doxycycline) within 24-48 hours without any mortality.

**Interpretation & conclusions:** This study reflects the cases infected with O1 El Tor Ogawa with severe and critical clinical features in Yavatmal district causing high morbidity in the form of severe dehydration and peripheral circulatory collapse which requires early, correct diagnosis and prompt treatment.

**Key words:** Cholera, *V. cholera*, under 5, living and hygienic conditions

## Introduction

Cholera, an acute intestinal infection caused by the bacterium *Vibrio cholerae* remains a major public health problem in many parts of Africa, Asia and Latin America. In spite of its rarity in developed countries, cholera is still an important infection worldwide (Khazaei HA 2011). During the monsoon season outbreaks of cholera are encountered almost every year. El Tor *V. Cholera* has replaced their classic counterpart over the last few decades. Outbreaks due to *V. cholerae* O139 have been reported from various places in India (Mishra M et al 2004) Intestinal infection with *V. cholerae* results in the loss of large volume of watery stool leading to severe and rapidly progressing dehydration and shock. Without adequate and appropriate rehydration therapy severe cholera kills about half of affected individuals (Sac DA et al 2004). We undertook this study to investigate the outbreak to identify *V. cholerae* and study the clinical profile of patients admitted in S.V.N. Govt. Medical College, Yavatmal.

## Material & methods

This prospective study was carried out in In-patient Department of Shri Vasant Rao Naik Government Medical College, Yavatmal (Maharashtra) over a period of two months from June 2012 to July 2012. Cholera is suspected when acute watery diarrhoea causes severe dehydration in a child above 2 years of age in an area where cholera is known to be present<sup>4</sup>. Detailed clinical profile of all the cholera cases was noted which included duration of diarrhoea, frequency of stools and episodes of vomiting, history of fever, history of blood in stool, history of passage of worms, history of unconsciousness, history of convulsions and availed health facilities and drugs taken before attending Shri Vasant Rao Naik Government Medical College, Yavatmal. Other relevant details such as source of drinking water of the family, collection of dirty around water source, household methods of water purification, sanitary facilities and locality where the family was residing were also recorded. Stool samples of all suspected cases were subjected to hanging drop preparation, stool microscopy for ova or cysts and culture studies according to the standard procedures in the laboratory during the study period. The findings of the study were tabulated and statistically analyzed.

## Results

Out of a total 378 cases of acute watery diarrhoea reporting to the inpatient departments of S. V. N. Govt. Medical College, Yavatmal ( Maharashtra) in the month of June- July 2012, 82 (21.6%) cases were from paediatrics ward & 296 (78.3%) cases were from medicine ward. Stool culture was positive for cholera in total 13 inpatient cases (3.43%), 8 (61.5%) cases from paediatrics ward & 5 (38.5%) cases from medicine ward. *Vibrio* was isolated from 13 samples. Of the 13 *Vibrio* isolates, all of them were *V. cholerae* 01. All of the *V. cholerae* isolates were identified as El Tor biotype, serotype 01, sub-serotype Ogawa strain. Inaba and Hikojima sero subtypes were not found in this study. Non-agglutinable (NAG) *Vibriosis* were totally absent. Thus *V. cholerae* 01 El Tor Ogawa was the only isolate during this outbreak. Since there was not a single isolate of *V. Cholera* 0139, this strain seems to have been completely replaced by *V. cholerae* 01 El Tor Ogawa.

Of the 13 isolates, all of the patients were from the villages of Yavatmal district. (Fig 1) Males and females were equally affected. Distribution of cases by age showed that 46.2% of cases were under 5 years of age, the two youngest children being 1.5 years old (Table 1). But no age was exempt, even 75 years old male was affected.

Among the laboratory confirmed 13 *V. Cholera* cases Hindu accounted for the highest number of cases (76.9%).

Out of 13 laboratory confirmed cases of cholera darting motility characteristics of *V cholerae* was positive in 9 of the cases.

The severity of cases ranged from mild cases with little complications to severe cases. The major manifestations are acute watery diarrhoea in all cases. Other manifestations are shown in table 2. The main major presenting symptom was Diarrhoea. The principle complications noted in 5 clinical cases, noticed mainly in moderate and severe cases and include (hypotension, severe dehydration)

8 (61.5%) cases had duration of diarrhoea more than 24 hours (Table 3) & all of them had attended the nearest health facility & had received some drugs including antibiotics, anti-diarrheal and unknown medicines before attending the S.V.N.Govt. Medical College, Yavatmal which in turn lead to missed diagnosis, increases severity of symptoms leading to increased morbidity & late reporting of the notifiable disease.

3 patients reported directly to tertiary care hospital, 10 cases were referred from respective RH or Primary Health Care Centre, 2 cases had visited private practitioner because symptoms had not subsided after their visit to nearest Govt Health care facilities.

Doxycycline was used as the antimicrobial agent of choice in all our cases. All the cases favourably responded to this treatment.

All the cases were from the area where there is poor sanitation and inadequate, unsafe water supply. Eight of the thirteen (61.5%) cases did not have access to municipal tap water, with 6/13 cases (46.2%) using a well water and 2/13 cases (15.4%) used hand pump water for drinking and cooking purposes. Almost in all the cases, there was the drainage line near the source of drinking water.

10 Cases were referred from nearest Primary Health Care centre or Rural Hospital. In addition, after visiting these health care facilities, 2 patients also visited to Private practitioner because of worsening of symptoms. Severe diarrhoea along with symptoms of shock like impalpable pulse & symptoms of dehydration was observed in the 5 patients visiting to SVNGMC, Yavatmal > 24 hours of onset of symptoms and those who had 2 visits to other health care facility (Table 4).

## Discussion

Cholera has a seasonal pattern in endemic areas although the season varies from place to place (Khanna KK et al 1988) Our observations also indicate that high relative humidity and high rainfall in the presence of high environmental temperature were associated with emergence of clinical cholera, this period covers the whole of rainy season as also observed by Varsha Amin et al 1985. There is no difference between male and female distribution. These results are similar to Iranian study which found that suspected patients with cholera were (58%) males and (42%) females (Keramat et al 2008) and to a study carried out at Baghdad by Al-abbassi et al 2005. Almost half of our cases are less than 5 years old. These findings are similar to those reported from other cholera-endemic areas, where the highest incidence of clinical cholera is usually observed among toddlers, pre-school children and women of childbearing age in Iraqi study (Keramat et al 2008) that is likely to be related to the lower level of immune competence in this age (Bhattacharya S.K. 1992). The present study found that all isolates have Ogawa serotype. Al- Abbassi et al 2005 reported an epidemic of cholera in Baghdad, Iraq during 1999 were serotypes Ogawa (79.6%).

There was no cholera death during the study period, but the case fatality rate is likely to be much higher under conditions when immediate rehydration and transport to hospital may not be available.

## Conclusion

Cholera remains an epidemic or endemic disease in much of India including Maharashtra. The highest proportion of cholera cases have been detected in Kalamb Taluka of Yavatmal District. The present outbreak of cholera in Yavatmal district was due to *V. cholerae* 01 El Tor Ogawa strain. Majority of the patients were less

than 5 years old. There was no gender difference. Overall living and hygienic conditions of all the patients were poor.

### Recommendations

Health workers should be trained regarding identification, early diagnosis and treatment so as to halt the progress of disease & to prevent the occurrence of secondary cases. In addition they should also be motivated to notify all the cases immediately to the local health authority.

Prompt referral services should be made available to reduce the severity of symptoms leading to increased morbidity.

General population should be made aware of the modes of transmission & methods of prevention of cholera. Since cholera is a disease of the poor & ignorant, these groups as well as the mothers of under five children who are hit hardest with the severe symptoms should be tackled first.

Epidemic preparedness should be advocated in the pre-monsoon period itself.

Proper & careful stool screening and culturing to detect cases before epidemic, should be applied, in addition adequate measures to improve hygiene, sanitation and supply of safe water to prevent any future epidemic of cholera.

Also in Cholera outbreak, teams must be formed including experts in diagnosis, treatment and prevention and experts ready to train local teams to tackle the problem during emergency situation.

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### About the authors

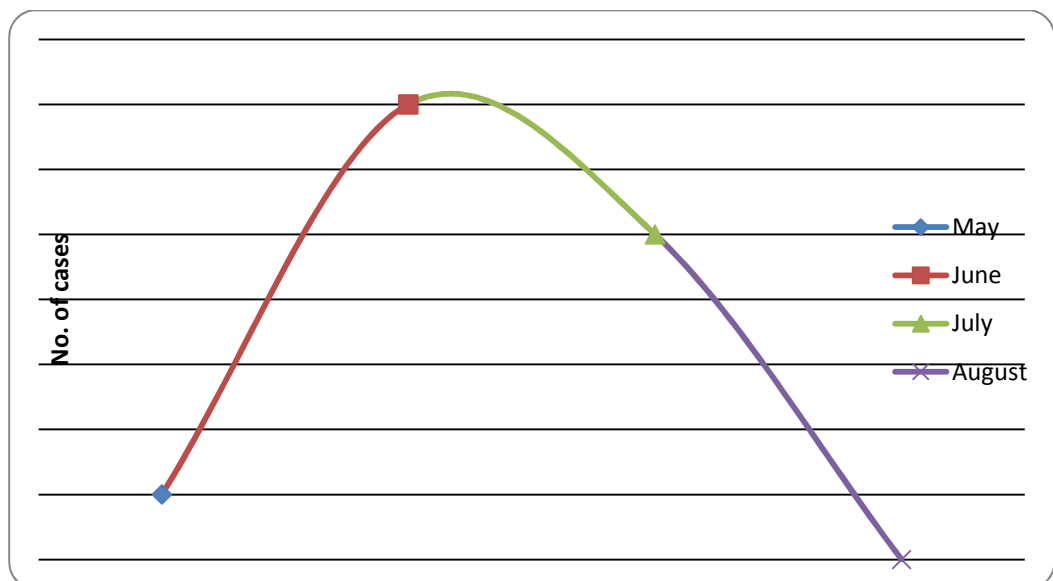
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Fig 1- Taluka-wise clustering of Cholera cases



Kalamb	8
Ghatanji	2
Ner	1
Darva	1
Aarni	1

Fig 2 Month wise distribution of laboratory confirmed cholera cases (n=13)



**Table 1** Age-wise distribution of cholera cases

Age(years)	Culture positive cases (n=13)
0-5	6 (46.2%)
6-15	3 (23.1%)
16-30	1 (7.7%)
31-45	1 (7.7%)
45-60	0
>60	2 (15.3%)
Total	13(100%)

**Table 2** The principle clinical manifestations

Symptoms	No. (%)
Diarrhoea	13
Bloody diarrhea	0
Vomiting	8
Abdominal pain	5
Fever	3
Tiredness & Lethargy	10
Drowsiness	2

**Table 3** Severity of disease according to case reporting duration

Severity of Disease	Cases reporting before 24 hours	Cases reporting after 24 hours	Total
Mild	2	1	3
Moderate	3	2	5
Severe	0	5	5
Total	5	8	13

Extended Mantel-Haenszel chi square for linear trend=5.42  
 p-value (1 degree of freedom)=0.01992

**Table 4** No of contacts with Health facility & severity of disease

No of contacts with Health facility	Severity of Disease		
	Mild	Moderate	Severe
One	0	1	0
Two or >two	1	3	5
Brought directly to SVNGMC	3	0	0
Total	4	4	5