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INVESTIGATION OF DEATHS OF PEDIATRIC PATIENTS IN KAPARADA BLOCK OF VALSAD DISTRICT

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ABSTRACT

Background: Measles is an acute, highly infectious disease of childhood, characterized by fever, catarrhal symptoms and typical rash[1]. World Health Organization (WHO) has reported 31 million cases and 7.77 lakh deaths in the year 2000[2].
Methods: For rapid appraisal, Rapid Response Team (RRT) visited the affected Block to do investigations at the field level. Primary information regarding the deaths in different villages was also collected. We collected information about measles vaccination, previous history of measles and any complication of measles and outcome of cases. Blood samples were also collected and tested at microbiology laboratory for detection of IgM antibody for measles virus.
Results: A list of 5 deaths was provided to the RRT by Block Medical Officer, Kaparada. On examination cases were having Fever, cough, and congestion of eyes and nose with maculo papular rash.
Conclusions: A measles outbreak affected Kaparada Block of Valsad District. History and the field visits give strong suspicion of the deaths being due to Measles.

INTRODUCTION

Measles is an acute, highly infectious disease of childhood, characterized by fever, catarrhal symptoms and typical rash[1]. World Health Organization (WHO) has reported 31 million cases and 7.77 lakh deaths in the year 2000[2]. Despite the availability of a safe and effective vaccine, globally measles killed over 530,000 and 182,000 in South East Asian region as reported in 2003[3]. Outbreaks of measles in a community tend to occur once the proportion of susceptible reaches 40%[4]. In 2008, there were 2,81,972 reported cases and 164 000 measles deaths globally – nearly 450 deaths every day or 18 deaths every hour. Most measles-related deaths are caused by complications associated with the disease. Complications are more common in children under the age of five, or adults over the age of 20. Infants and young children, especially those that are malnourished, are at highest risk of dying from measles. A review of community based studies of published measles outbreak investigations found a median case fatality ratio of 3.7%, range 0 to 23.9%[5].

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The overwhelming majority (more than 95%) of measles deaths occurs in countries with low per capita incomes and weak health infrastructures. There for the fourth Millennium Development Goal (MDG 4) aims to reduce the under-five mortality rate by two-thirds between 1990 and 2015. Recognizing the potential of measles vaccination to reduce child mortality, and given that measles vaccination coverage can be considered a marker of access to child health services, routine measles vaccination coverage has been selected as an indicator of progress towards achieving MDG 4[6]. The primary reason for this high disease burden is inadequate vaccination coverage due to under-utilization of measles vaccine and weak immunization services in many parts of the country. This is unacceptable, because measles vaccine is highly effective, safe, and cost-effective[5].

After the news of a death of few pediatric patients from Kaprada Block, Valsad District, appeared in the local daily newspapers of Surat, for rapid appraisal a Rapid Response Team (RRT) visited the affected Block to do investigations at the field level. Team comprised of faculties from the Department of Preventive Social Medicine, Pediatric, Medicine and Microbiology.

METHODOLOGY

Team members started from the Medical College on 21st March 2010 and reached at CHC Kaparada. A meeting was conducted with block medical officer, epidemiologist, incharge RCHO/epidemiologist, Medical officer (Dabkhal) and Medical officer (Sutharpada), to get an insight into the details of the situation. Primary information regarding the deaths in different villages was also collected. Cases of fever with rash and admitted in Karaprada CHC were examined by Pediatrician accompanying the team. It was decided to visit the village "Mani" where an 8 month old female child was reported to be expired. Mani was also reported to have maximum number of suspected viral fever cases as per the line list of the suspected case obtained from the district health officials. The standard case definition was used for diagnosis of measles. A combination of major and minor criteria was used to clinically identify the measles cases.

Major criteria: Fever, Rashes

Minor criteria: Presence of cough, or coryza, or conjunctivitis

A study subject was considered to have measles if he presented with major criteria and any of the three minor criteria. We searched for the cases by house to house visit. Inquiries about measles cases were made from the mothers or responsible persons. Inform oral consent was taken of interviewee before initiation of the survey. We collected information about measles vaccination, previous history of measles and any complication of measles and outcome of cases. Immunization status was assessed by checking the cards where available or by a convincing history of immunization given by the mothers. "Unknown" was used to designate patients with no knowledge of their immunization status. Any episode of diarrhea, pneumonia, ear infection (dummy for Ottitis media) like complications asked. Blood samples were also collected by Microbiologist and tested at microbiology laboratory, Government Medical College, Surat for detection of IgM antibody for measles virus.

Observation of suspected viral fever cases admitted in Karparada Community Health Centre (CHC)

Case 1

10 month old female residing in village Rahor, Holi Faliya, PHC-Lavkar. She had high grade, intermittent Fever without rigors, cough, and congestion of eyes and nose since last 7 days accompanied with maculo papular rash all over the body since 2 days.

On examination: Eye discharge was present & throat was severely congested. Maculo papular rash were seen all over the body. Child was having left mid and lower zone crepitations on auscultation.

H/o Immunization: Child was fully immunized (As per the relatives)

H/o Contact: Elder sibling was also admitted in the same CHC (Mentioned here with as case 2).

Possible diagnosis *Measles with left lower zone pneumonities*.

Action Taken

- Necessary samples were taken by microbiologists.
- Treatment was prescribed by the accompanying pediatrician with an advise to follow the treatment.
- Counselling was done for isolation from family members, good nutrition, early diagnosis and prompt treatment and continuing treatment.

Case 2 (Sibling of Case 1)

3 years old male child residing at village Rahor, holi faliya, PHC-Lavkar. He was suffering from fever, cough, and congestion of eyes and nose since 10 days and rash all over body since 4 days.

On examination: Eye discharge was present & throat was severely congested.

Observations

PHC	Village	Population	Address	Name of patient	Sex	Age	Sign/symptoms	Place of treatment
Sutharpada	Mani	1364	Nava Pada	Patient1	F	7 Month	Fever, cough and rash	No treatment taken
Sutharpada	Chijpada	752	Gam	Patient2	M	4 Month	Cough	Maharashtra on 26-02-10
Sutharpada	Tokarpada	992	Chikhlikhori	Patient3	F	1 yr	Cough, cold, semi-conscious	Phc Sutharpada, Civil hospital valsad
Dabkhal	Nangam	2755	Ghatta Faliyu	Patient4	M	7 Month	Breathlessness, fever, cough	Dhamani Dharmpur
Dabkhal	Nangam	2755	Bhanusi Faliyu	Patient5	M	12 days	Not taking food for 10 days	

A list of 5 deaths was provided to the RRT by Block Medical Officer, Kaparada

A line list of total 17 suspected cases, PHC and village wise was also provided to the rapid response team. This list also incorporates the above mentioned 5 deaths

Village	Suspected cases	Name the of PHC
Mani	9	Sutharpada
Chichpada	2	Dabkhal
Tokarpada	3	Sutharpada
Rahor	2	Lavkar
Ghotan	1	Lavkar
Total	17	

Maculo papular rash were present all over the body. On respiratory system examination the child was having bilateral crepitations.

H/o Immunization: Child was fully immunized (As per the relatives)

H/o Contact: Unknown, however his younger sibling was also admitted in same CHC (Mentioned here with as case 1).

Possible diagnosis: *Measles with Broncho Pneumonia.*

Action Taken

- Necessary samples were taken by microbiologists.
- Treatment was prescribed by the accompanying paediatrician with an advice to follow the treatment.
- Counselling was done for isolation from family members, good nutrition, early diagnosis and prompt treatment and continuing treatment.

Case 3

2 years old female child residing at Ghotan village, Kumdha faliya, PHC-Lavkar. She was suffering from fever and cough since 5 days and rash all over body since last 2 days.

On examination: Eyes and throat were congested. Maculo papular rash were seen all over the body. On respiratory system examination the child was having bilateral crepitations. H/o Immunization: Child was fully immunized (As per the relatives)

H/o Contact: Unknown.
Possible diagnosis: Measles *with Broncho Pneumonia.*

Action Taken

- Necessary samples were taken by microbiologists.
- Treatment was prescribed by the accompanying paediatrician with an advice to follow the treatment.
- Counselling was done for family isolation, good nutrition, early diagnosis and prompt treatment and continuing treatment

Observations during the field visit at Mani village

As per the list provided by the health officials out of total 17 cases 8 suspected cases of fever were from this village. Verbal Autopsy was done for 8 month old female child (patient1) who expired on 15th March. Information provider was the mother of the baby. Child had high grade fever along with cough since 4th march 2010. After 3 days of fever child developed rash all over the body starting from face and spreading downwards with in 1 day. Following rash child became sicker and developed difficulty in breathing and refused to accept feeds. The baby was not taken to any health care professional (Public or Private) and the reason as narrated by the mother was due to their customs. Althought Anganwadi worker had visited home of the baby and advised for admission at Community Health Centre for the illness but relatives refused for the same. Condition of the child worsened on 15th of March and child died on the same day. Mamta card of the child was seen and child was vaccinated for only BCG, DPT1 and OPV1 (Partially vaccinated). Five other children residing in the neighborhood of the deceased baby, two amongst them were having active measles at the time of visit and other 3 also had measles according to history. None of them had taken treatment. They all were partially vaccinated due to migration to their work place. Necessary samples of 2 children suffering from active measles were collected by the microbiologist. Our team has advised to admit those 2 children, but relatives refused for the same. Oral medications were given to them as per the advice of the pediatrician.

Conclusion

A measles outbreak affected Kaparada Block of Valsad District. History and the field visits give strong suspicion of the deaths being due to Measles. Below mentioned is the strong evidence for the same.

- Out of the total 5 deaths, four children were less than the age of 9 months (High risk for measles in the age group of 6 months to 3 years.
- H/o of immunization for baby (patient1) who died was partially immunized as per age, for DPT and Polio vaccine though the child was not eligible for measles vaccine.
- Epidemiologically, spring season and initiation of summer (January to July) is prone for maximum occurrence of measles cases.
- There was clustering of cases with in vicinity of death. Documentary evidence also suggests that Secondary attack Rate (SAR) for measles is 80%.
- Treatment was prescribed by the accompanying pediatrician with an advice to follow the treatment.
- Counselling was done for family isolation, good nutrition, early diagnosis and prompt treatment and continuing treatment.
- Rigid Customs/beliefs in lack of utilizing health services, Lower Socio-Economic status and Illiteracy were contributing factors in the present out-break.
- As reported by the RCHO, co-ordinator of South Gujarat, Kaprada is known for low vaccination coverage that may contribute to the outbreak.
- Moreover, all blood samples of patients of CHC Kaprada and village Mani came out to be positive for measles.

Suggestions and Actions

- Detailed survey and Verbal autopsy of all deaths due to suspected cases of Measles should be under taken by CDHO-Valsad/EMO Valsad.
- Catch Up round for Measles Vaccination can be initiated in the region with appropriate cold chain maintenance and technical efficacy.
- Additional Vitamin A round can be taken up in the Block.
- IEC activity for active early reporting, isolation, immunization and treatment adherence can be taken up to avert such outbreaks in future.

The study highlights the urgent need to raise the vaccine coverage levels rapidly in all villages of Kaprada block to achieve measles control and prevent future outbreaks.

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