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EPIDEMIOLOGICAL INVESTIGATION ON RABIES DEATHS IN BERASIA BLOCK, BHOPAL

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ABSTRACT

Background: In rural area of a community block, four rabies deaths within 19 days following exposure, in spite of receiving Post exposure Prophylactic vaccination warranted epidemiological investigation and situational analysis to take up remedial measures if any.

Methodology: A detailed epidemiological study was planed. The component of the study included eco-geographical evaluation of the study area by visit, post exposure clinic-epidemiological evaluation of survivors by clinical examination and interview, verbal autopsy from the kith and kin of the four dead cases, enquiries on practice of standard protocol by health providers an health seeking behaviour of the cases/families involved through interview and immunological analysis for measuring the titers of antirabies antibodies in sera of some patients following exposure/vaccination. All the 36 cases bitten by rabid Jackal were contacted and interviewed. Family contacts of all four who died were also interviewed. Block Medical Officer of the area was also interviewed.

Result: It was found that man made alterations in eco-geographical features were leading to increase in exposure risks to sylvatic rabies. It was found that standard protocol for Post Exposure Prophylaxis was not in practice and health providers and other related agencies needed reorientation on conduct of post exposure prophylaxis. It was found that population living in high risk zone needs to be educated on immediate care to be taken after exposure and modify their own health seeking behaviour by not visiting the quacks.

Key words: Rabies, Sylvatic cycle, Exposure Categorization, Post Exposure Prophylaxis

INTRODUCTION

Local vernacular newspaper on 6th October 2008 reported about an incidence of a rabid jackal attacking thirty six residents of 5 villages of Berasia Block of Bhopal district on 5.10.08 between 11-00 AM to about 3.30 PM. It was killed on the same day by villagers around 3.30 PM. Later by 24th October 2008 the incidence of four deaths among the victims were also reported in the news papers.

Chief Medical and Health Officer, Bhopal approached the Dean, Gandhi Medical College, Bhopal, vide letter no. P.M.A./08/Q-1, to help

in investigation of the rabies deaths occurred in Berasia Block and to suggest remedial action for further course of action if any. The Dean, Gandhi Medical College, Bhopal asked department of Community Medicine, Gandhi Medical College Bhopal to investigate the incidence.

MATERIAL AND METHODS

Following authorization from the Dean, GMC Bhopal, a small team consisted of one Assistant Professor (author), three post graduate students and one lab technician from the Department Of Microbiology was constituted. The team decided to investigate the incidence on following points.

(1)Eco-geographical issues, (2)Clinical examination of the cases living in five villages, (3)Practice of Standard protocol on post exposure prophylaxis, (4)Chances of vaccine failure, (5)Health Seeking Behaviour

Team made three visits to the field area, initially on 24th October and contacted local Block Medical Officer at Community Health Centre, Berasia to collect first hand information about the incidence and plan the Investigation.

Later team again visited on 25th October and 4th November 2008, with a Performa in which major event related to the incidence were to be recorded. All thirty six cases including contact of the four dead patients were contacted and interviewed. Six serum samples of the victims for assessment of antibody levels against the rabies virus were collected on 4th Nov. 2008 from village Mengrakala and were sent to National Institute of Communicable Diseases, Shamnath Marg Delhi.

OBSERVATIONS

These villages interspaced with fields and denuded forest (mainly wild shrubs) were found situated within a radius of about one Km. In absence of bigger cats and other canines, Jackals were on the top of the wild food chain. Thus a jackal suffering with rabies entered the villages and wounded 36 residents of five villages (Mengrakala- 13, Dungaria-7, Barrai- 7, Bairagarh-7 and Semri-2). Of these 36 victims, 20 were male and 16 were females. Age wise distribution revealed that of the 36 persons, 14 were children and 22 were adults (Table-1). The animal was killed around 3.30 pm on same day. Animal's corps was not preserved for any examination. Block Medical Officer Community Health Centre, Berasia received first case of the Jackal bite at about 3 PM on 5.10.08 and by evening about 20 persons visited the hospital and reported about the incidence of wild jackal bite.

Considering the seriousness of the incidence BMO informed local forest authorities about the incidence. The local forest authorities promptly arranged antirabies vaccine directly to the victims and assured vaccine supply from their own funds. The vaccine was procured from local medical shop by the patients themselves, who after collecting the vaccine carried vaccine on person mostly in hands (without any cold chain precautions) and got themselves vaccinated at close by CHC. The CHC referred all cases to Hamidia Hospital (a tertiary health care Hospital attached to Gandhi Medical College Bhopal) for expert opinion and needful. Few patients decided to visit private nursing home at their own for post exposure treatment. And at least two of them were prescribed and given anti rabies immunoglobulin. Some of the patients decided to visit a physician of alternative medicine who claims to treat rabies at district Ujjain.

Death of four victims namely M. (case-1), S.S.(case-21), A.S. (case-32) and T.S. (case-33) occurred on 24/10/08, 23/10/08, 20/10/08 and 21/10/08 respectively (Table 1). The first case died within 15 days of the bite. All the four cases were bitten on the face/above the neck and exhibited typical symptoms of the rabies (on verbal autopsy from the family members). None of these cases had received anti rabies immunoglobulin.

The team observed that all the victims were seen initially at CHC Berasia and their findings were recorded on simple OPD slips. Findings were reported as simply of jackal bite. No categorization of the wound was available. After initial treatment including Tetanus toxide at CHC Berasia, patients were referred to Hamidia Hospital. There also on finding that first dose of vaccine has already been given patients were sent back home. The categorization of the Contact/bite was done by the Investigating team in retrospect, mainly on the basis of examination of the scarred wound and the history obtained from the patients. The contact history and history of the symptoms exhibited by the patients prior to death was obtained from

the close relatives of the patients. Classification of the contact in retrospect was done as in Table-1. Team also found that all the cases including those who died received 3-5 doses of vaccine. The death among the vaccinated raised the issue of vaccine efficacy.

Table 1: Description of the patients exposed to rabid jackal on 5.10.08 and their follow up

Age(Yrs) Sex	Category/ Exposure	Tetanus toxoid	Immunoglobulin	Vaccine/ Doses	Status as on 4.11.08
22 M	**III / S**	**+**	**NIL**	**4**	**Dead**
35 M	II / M	+	NIL	4	Alive
18 F	II / M	+	NIL	4	Alive
12 M	II / M	+	NIL	4	Alive
03 M	III / S	+	+	4	Alive
90 F	II / M	+	NIL	4	Alive
32 M	II / M	+	NIL	3	Alive
05 M	III / S	+	**+**	4	Alive
30 F	III / S	+	NIL	5	Alive
10 F	II / M	+	NIL	5	Alive
15 F	III / S	+	NIL	5	Alive
45 M	III / S	+	NIL	4	Alive
60 M	III / S	+	NIL	4	Alive
04 F	III / S	+	NIL	4	Alive
02 F	III / S	+	NIL	4	Alive
04 F	III / S	+	NIL	4	Alive
25 F	III / S	+	NIL	4	Alive
30 M	II / M	+	NIL	4	Alive
45 M	II / M	+	NIL	4	Alive
08 F	II / M	+	NIL	4	Alive
60 M	**III / S**	**+**	**NIL**	**4**	**Dead**
25 F	II / M	+	NIL	4	Alive
02 M	III / S	+	NIL	4	Alive
60 F	II / M	+	NIL	4	Alive
10 F	III / S	+	NIL	4	Alive
35 M	II / M	+	NIL	4	Alive
06 F	II / M	+	NIL	4	Alive
70 F	III / S	+	NIL	4	Alive
02 M	III / S	+	NIL	4	Alive
24 M	III / S	+	NIL	3	Alive
07 F	III / S	+	NIL	5	Alive
55 M	**III / S**	**+**	**NIL**	**3**	**Dead**
45 M	**III / S**	**+**	**NIL**	**4**	**Dead**
70 M	II / M	+	NIL	4	Alive
22 M	II / M	+	NIL	5	Alive
30 M	II / M	+	NIL	4	Alive

Note: Categorization of the Contact/bite was done by the Investigating team in retrospect, mainly on the basis of examination of the scarred wound and the history obtained from the patients. The contact history and history of the symptoms exhibited by the patients prior to death (Case no 1,21,32/33) was obtained from the close relatives of the patients.

M= Minor : Prophylaxis modality = Local care+ Anti tetanus measures+ Vaccine

S = Severe: Prophylaxis modality = Local care+ Anti tetanus measures + Anti rabies Immunoglobulin

Hence, the team collected six serum samples from the people (five cases had contact category II and one cat. III) From village Mengrakala and the sample were sent to National Institute of Communicable Diseases, Delhi for presence of protective antirabies antibody titre. In accordance to the report sent by the NICD on 7/11/08, the antibody titre in the sera of six

patients was found to be at satisfactory level indicating that the vaccine/exposure has produced antirabies antibodies at or above the level sufficient to protect the cases from rabies.

DISCUSSION

This rabies exposure had some unique features. It is documented and well known that rabies runs its sylvatic cycle among the wild animals and the disease enters its urban cycle in the dog/ human population through the bite of a dog who to start with was either bitten by some wild rabid animal or another rabid dog. Occasionally man may get bitten by the rabid wild animal while venturing in to the forests[1]. Present study is probably one of the rare situations at least in India when the sylvatic rabies has directly inflicted upon the human population through the bite of the rabid wild animal; a jackal in present case. The team found that the cause behind this deviation is obliteration of the buffer zone between the villages, their fields and the forest.

The team examined the clinical issues and found that this is the area which needs serious attention. It is found that the patient were examined and their findings were recorded on simple OPD slips without classifying the contact and the exposure level, similarly even at tertiary care hospital too classification of the contact and level of the exposure was not done. Classification of the exposure is very important as with exposure level, modalities of the Prophylaxis also vary[2]. In this study it was observed that of the 20 victims with severe exposure only two received anti rabies immunoglobulin in a private hospital while the remaining 18 were not advised or given anti rabies immunoglobulin. Investigators believe that if not given, at least patients would have been advised anti rabies immunoglobulin. The efficacy of rabies immunoglobulin treatment combined with rabies vaccine has been proved by animal studies and natural experiments when Wolves have bitten group of people in Iran[3] and China[4]. The mortality from the head wounds was reduced five folds by addition of immune serum to vaccine treatment[5]. At this juncture it would not out of the place to recapitulate that all the four who died were bitten on face /above the neck. Four people who died none of them received antirabies immunoglobulin while it was mandatory for them as they had severe exposure and had they been given immunoglobulin chances of their survival would have increased.

Incubation period of the disease among the victims was very short, in fact one died within the 14 days after the exposure, while other three died within 19 days following exposure. This led the team to consider the possibility of vaccine failure. It was especially pertinent to study this issue following the observation that vaccine was procured and given to the villagers directly, who carried vaccine in person without realizing the thermolabile nature of the vaccine and without maintaining cold chain. Six sera samples from village Mengrakala were sent to National Institute of Communicable Diseases Delhi. However, it was reported that the vaccine/exposure produced the protective immunity satisfactorily.

The team would like to appreciate the promptness with which the local Forest authorities and Block Medical Officer acted in arranging the anti rabies vaccine for the victims. Had vaccine not arranged and given in time mortality would have gone high. But at the same time knowing well that the rabies is a fatal disease, handling of impending rabies cases form preventive point of view left much to be desired. There was no case records of the victims at CHC, victims were dispensed with recording their findings on the outdoor slips. Cases were not classified according to the contact. And lastly the cases having category III contact were not recommended Anti rabies immunoglobulin. The team considers this a very serious lapse on the part of the health providers at all levels. This issue needs action for redressal.

It has been observed that many a villagers went to the quacks for the treatment. Hence, it becomes pertinent that villagers/ community living in the high risk area should be clearly educated about the deadly nature of rabies and should be informed that there is no treatment of rabies except timely and complete post exposure prophylaxis (local wound cleansing, vaccination/Anti rabies Immunoglobulin) in accordance to the guidelines.

RECOMMENDATIONS

Health Providers/ population must be sensitized on following issues:

1. Health providers must be trained to consider rabies exposure a medical emergency[6] and

conduct a thorough clinical examination and practice Standard Protocol for classification and post exposure Prophylaxis which broadly has three component[7]. These are wound treatment (Cleansing with concentrated soap solution and copious running water, swab with virucidal solution, avoid or delay suturing[8], Tetanus prophylaxis and antibiotic). It should be followed by active immunization and passive immunization.

2. Population in high risk geographical zones must be sensitized towards the need and importance of appropriate treatment of rabies rather than making visits to the quacks.

CONCLUSION

Department of Preventive and Social Medicine was asked to investigate the rabies deaths following the bites by a rabid jackal in villages of Berasia Block on 5.10.08. It was found that 36 people were bitten by a rabid Jackal, of which 4 died within the 19 days following exposure. It was observed that in spite of recommendations in standard text books, of the 20 cases with contact category III only two could get vaccine and the Anti-rabies immunoglobulin as recommended. Of the remaining 18 non recipients of immunoglobulin four died within 19 days following exposure. The health care providers need sensitization on standard operating practices related to rabies post exposure immunoprophylaxis. Looking in to health seeking behaviour of the population it is suggested that population should be educated about the dangers of seeking alternative therapies in case of proven rabies exposure.

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