Original Research Article

Compliance to rabies immunoglobulin in post-exposure prophylaxis of category III animal bite cases attending antirabies clinic of government tertiary care hospital, Solapur, Maharashtra, India

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ABSTRACT

Background: In India since 1985, every year 25000-50000 human rabies deaths have been reported which accounted for 60% of global mortality. The rabies immunoglobulin (RIG) in particular are life-saving in severe (WHO category III) rabies exposures, Hence present study with objectives to assess treatment compliance of rabies immunoglobulin in animal bite cases and to study reason behind not taking RIG is undertaken.

Methods: A cross sectional study was conducted among all 460 WHO category III animal bite cases attending ARV clinic at government tertiary care hospital, Solapur during the month of March 2016. After obtaining verbal informed consent, a predesigned questionnaire was used, the assessment of treatment compliance of RIG was considered by asking and confirming with hospital records, those couldn’t traced were contacted by using telephone survey method. Data was analysed by using statistical software SPSS 16.0 version.

Results: A total 460 category III animal bite victims were interviewed from ARV clinic, 80.4% cases were completed rabies immunoglobulin treatment as compared to 19.6% defaulted RIG. The majority of cases were males 68.5%, children ≤15years were 33.5%, 75.0% from urban area, 77% cases belongs to below poverty line category, 35.9% had bite mark on left lower limb. The main animals responsible for bites were dogs (95.2%). The predominant reason behind not taking RIG was lack of money (67.7%).

Conclusions: The present study showed maximum compliance to rabies immunoglobulin in Category III animal bite cases however economic constrain was prime hurdle followed by small injury in not taking RIG.

Keywords: Animal bite, Compliance, Post exposure prophylaxis, Rabies immunoglobulin

INTRODUCTION

Human rabies is endemic in India and annually an estimated 20,000 persons’ die of this disease.¹ In India one person is bitten by animal every 2 seconds and one person dies from rabies every 30 minutes.² In post exposure prophylaxis against rabies severe (WHO category III) cases along with anti-rabies vaccine rabies immunoglobulin (RIG) administration was decisive. RIG provides passive immunity in the form of ready-made anti-rabies antibodies. RIG has the property of binding with the rabies virus, thereby resulting in neutralization and thus loss of infectivity of the virus and hence it is most logical to infiltrate RIG locally at site of exposure.

Two types of RIGs are available; (1) equine rabies immunoglobulin (ERIG): It is of heterologous origin produced by hyper-immunisation of horses.³ The dose is
40 IU per kg body weight of patient. The ERIG (Inj. Equirab) produced in India contains 300 IU per ml and price of 5 ml ampoule is 433 rupees; (2) human rabies immunoglobulin (HRIG): It is homologous origin and relatively free from side effects. The dose is 20 IU per kg body weight. HRIG (Inj. Berirab-P) preparation is available in concentration of 150 IU per ml and price of 2 ml ampoule is 5400 rupees. Thus the rabies immunoglobulin (RIG) in particular are life-saving in severe (WHO category III) rabies exposures, Hence present study with objective; (i) to assess compliance of rabies immunoglobulin in post exposure prophylaxis of animal bite cases; (ii) to study socio-demographic profile of animal bite cases and reasons behind not taking RIG is undertaken.

METHODS

A cross sectional study was conducted among all 460 WHO category III animal bite cases attending ARV clinic at Dr. Vaishyampayan memorial government tertiary care hospital, Solapur, Maharashtra during the month of March 2016. Institutional Ethical Committee approval was obtained prior to study.

After obtaining verbal informed consent, a predesigned, pretested questionnaire was used; this study instrument included socio-demographic details and the history of animal bite on the first visit. On subsequent visits, the patients were asked about RIG administration and if defaulting RIG reasons behind that then after treatment compliance of RIG was considered by asking and confirming with hospital records, those couldn’t traced were contacted by using telephone. In this hospital antirabies vaccine was available to all patients free of cost but RIG was out of stock So that every patient had to purchase RIG. Data was analysed by using statistical software SPSS 16.0 version. The statistical analysis included percentages and Chi square test. The results obtained were considered statistically significant whenever $P<0.05$.

RESULTS

Majority of severe (WHO category III) animal bite cases taken RIG 80.7% (370) and remaining 19.3% (90) cases defaulted RIG. The majority of cases were males 68.5%, children ≤15years were 33.5%, educated up to high primary were 36.3%, 75.0% from urban area, 77% cases belongs to below poverty line category and The main animals responsible for bites were dogs (95.2%). Economic status and type of animal was significantly and highly significantly associated with RIG compliance respectively (Table 1).

| Socio-demographic variable | Taken RIG Number (% n=370) | Not taken RIG number (% n = 90) | $P$ value |
|----------------------------|-----------------------------|---------------------------------|-----------|
| Age group (in years)       |                             |                                 |           |
| 0-15                       | 126 (34.1)                  | 28 (31.1)                       | 0.518     |
| 16-30                      | 79 (21.4)                   | 26 (28.8)                       |           |
| 31-45                      | 69 (18.6)                   | 12 (13.4)                       |           |
| 46-60                      | 53 (14.3)                   | 14 (15.6)                       |           |
| >60                        | 43 (11.6)                   | 10 (11.1)                       |           |
| Gender                     |                             |                                 |           |
| Male                       | 256 (69.2)                  | 59 (65.6)                       | 0.253     |
| Female                     | 114 (30.8)                  | 31 (34.4)                       |           |
| Economic status            |                             |                                 |           |
| BPL                        | 278 (75.1)                  | 76 (84.4)                       | 0.028     |
| APL                        | 92 (24.9)                   | 14 (15.6)                       |           |
| Education                  |                             |                                 |           |
| Illiterate                 | 46 (12.4)                   | 13 (14.4)                       | 0.928     |
| Primary                    | 101 (27.3)                  | 23 (25.6)                       |           |
| High primary               | 136 (36.8)                  | 31 (34.4)                       |           |
| Secondary and above        | 62 (16.8)                   | 15 (16.7)                       |           |
| Graduate and above         | 25 (6.7)                    | 08 (8.9)                        |           |
| Residence                  |                             |                                 |           |
| Urban                      | 283 (76.5)                  | 62 (68.9)                       | 0.071     |
| Rural                      | 87 (23.5)                   | 28 (31.1)                       |           |
| Type of animal             |                             |                                 |           |
| Dog                        | 360 (97.3)                  | 78 (86.7)                       | 0.001     |
| Cat                        | 06 (1.6)                    | 11 (12.2)                       |           |
| Others (monkey, pig etc.)  | 04 (1.1)                    | 01 (1.1)                        |           |

$\chi^2$ test was used and $p <0.05$ were considered statistically significant.
As lower limbs are more accessible to animals they (68%) were more prone for animal bite than upper limbs (20%) also left lower limb (36%) was more injured than right lower limb (32%). Others include trunk, back, neck, face etc. (Figure 1).

Figure 1: Distribution of cases according to site of bite.

Figure 2 shows patients’ perspective for missing Inj. RIG, economical constrain, small injury and patients’ forgetfulness were major reason behind not taking RIG whereas not being advised about Inj. RIG was least common reason.

Figure 2: Reasons for de-faulting the Inj RIG.

DISCUSSION

This study was done to identify compliance to RIG in PEP for animal bites and added a note on reason behind missing RIG. In our study we found that 80.7% severe (WHO category III) animal bite cases taken Inj. RIG as compared to 55% in a study conducted at Philippine children medical center, by Ruth Faye Romero-Sengeson and 29.4% at government tertiary hospital, south Karnataka by Jahnvi R et al.4,5

Similar findings of demographic characteristics of severe animal exposure cases were observed by Sudarshan MK et al showing 69.6% male, 45% children <15 years, 61.5% from urban area and 79.7% from below poverty line category.6 On other hand in study conducted at Panvel by Wankhede V et al noticed that 27.8% were children<15 years.7 Similar results related to site of exposure were found in study conducted by Shrinivas PJ et al lower limb was the most common site exposed to animal bite followed by upper limb.8 As compared to our 68% lower limb bite 89.8% was found by Venu Shah et al.9

As compared to our study reason behind missing ARV dosage by Bariya BR et al was holiday at schedule date of ARV, personal work, forgotten, economical problem and not aware of ARV decendingly.10

CONCLUSION

The study showed that the compliance to RIG was good and economical constraints were major reasons for non-compliance of RIG so that RIG should be available to all patients free of cost. Small injury was next reason for non-compliance of RIG for that effective counselling of patients addressing their gaps of knowledge and strengthening of IEC activities of PEP of rabies in community is needed.

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