http://jmscr.igmpublication.org/home/
ISSN (e)-2347-176x ISSN (p) 2455-0450
crossref DOI: https://dx.doi.org/10.18535/jmscr/v7i7.28

IGM Publication
Journal Of Medical Science And Clinical Research
An Official Publication Of IGM Publication

Availability of Rabies Immunoglobulin at Primary Health Centers

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Abstract
Rabies is acute encephalitis caused by rabies virus. The World Health Organization estimates 60,000 human deaths annually from endemic canine rabies. This can be prevented through timely administration of post exposure prophylaxis to bite victims. Administration of Anti Rabies Immunoglobulin (RIG) along with anti rabies vaccine (ARV) immediately after a bite categorized as severe (grade III) will reduce the chances of rabies. ARV is not sufficient in severe cases as it takes seven days to begin providing protection. So, RIG is infiltrated into the wound for immediate short term protection in the meanwhile the rabies vaccines start to work. As dog bites are common in rural areas, RIG must be available in primary health centers to reduce the risk of rabies. Limited supply impedes the accessibility of lifesaving treatment especially in rabies endemic areas.
Keywords: *Rabies, anti rabies vaccine, anti rabies immunoglobulin.*

Introduction

Rabies is acute encephalitis caused by rabies virus which belongs to the genus Lyssa virus in the family of Rhabdoviridae. The virus affects all mammals and infected species die from the disease once clinical signs are manifested [1]. Over 95% of rabies deaths in humans result from transmission of virus through the bites of infected dogs [2]. In 2015, WHO Member States and key partners set a global goal to achieve zero human deaths from dog transmitted rabies by 2030 [3]. This can be achieved by timely administration of post exposure prophylaxis (PEP) through the combined administration of rabies vaccine (ARV) and anti-rabies immune globulin (RIG) to bite victims. The history of anti rabies vaccinations began in the 19th century, when Louis Pasteur proposed the first vaccine by demonstrating that dogs who had received a preparation from nerve tissue of infected rabbits were prevented from rabies after inoculation with the live virus[4]. ARV is not sufficient in severe cases as it takes seven days to begin providing protection. So, RIG is infiltrated into the wound for immediate short term protection in the meanwhile the rabies vaccines start to work. However the existing supply of RIG is limited especially in primary health centers. The

aim of this study is to insist the availability of RIG in primary health centers.

Method

This is a record based study done at government medical college & Hospital, Ongole, Andhra Pradesh, India. Data collected from the anti rabies vaccination records of government general hospital (GGH), Ongole from January 2019 to March 2019. ARV and RIG given to patients attending the casualty of GGH in three months were noted.

Statistical analysis

The data collected was entered in Microsoft Excel 2007. The data is represented in the form of tables and charts.

Results

In the present study, anti rabies vaccine and rabies immunoglobulin given to patients in Ongole, Prakasam district and its surrounding villages were collected from the vaccination records of GGH, Ongole. Figure 1 shows ARV given to patients of below 14yrs and above 14yrs. 787 children and 1954 adults were vaccinated with ARV in three months, whereas 804 patients received RIG in three months (fig 2). Table 1 shows the comparison of ARV and RIG given to patients in three months (fig 3).

Table 1 Anti rabies vaccine and rabies immunoglobulin given to patients

Month	No.of ARV given	No.of RIG vials given
Jan	1052	261
Feb	881	238
Mar	808	305

Figure 1: Anti rabies vaccine given to Patients

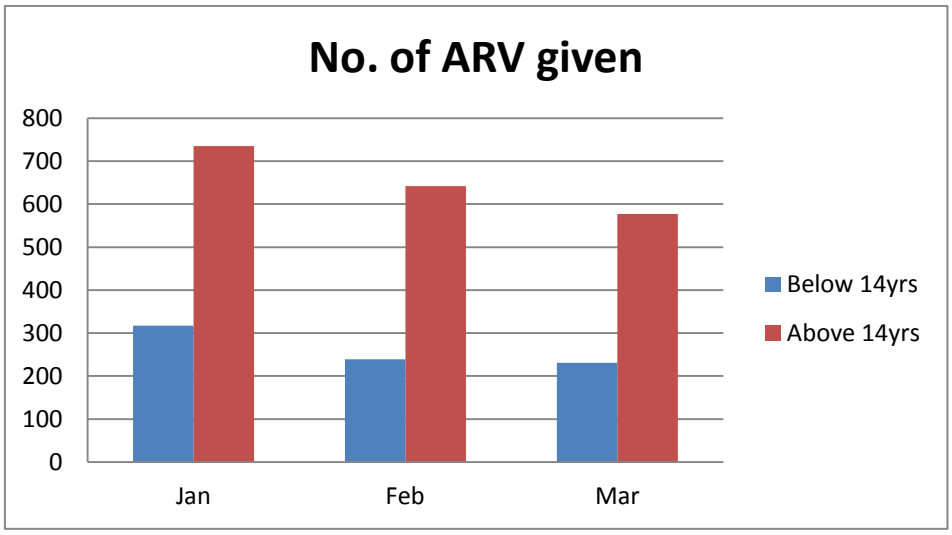


Figure 2: Rabies immunoglobulin given to patients

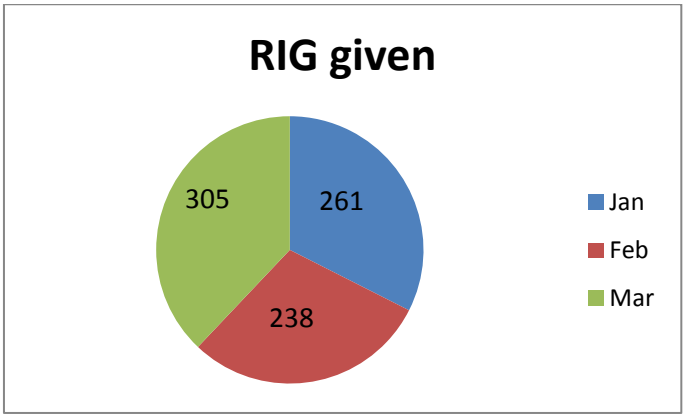
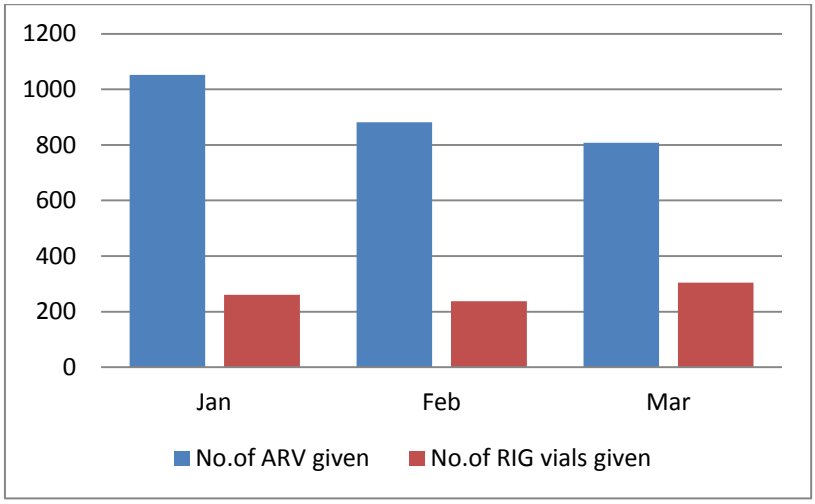


Figure 3: Comparison of ARV and RIG



Discussion

Rabies is a widespread fatal viral disease that affects animals and humans. It has been reported in more than 150 countries worldwide. Human rabies is a major public health concern and is seen as a neglected disease worldwide by the World Health Organization[5]. In most of the cases, domestic dogs are the primary reservoir of the virus, and are responsible for human transmission, particularly in India and China. The worldwide distribution of rabies has changed since 2010, and most of the rabies deaths occur in Africa, South-East Asia and Western Pacific regions [5]. In Asia, India has the highest number of human death caused by rabies [6] on an average of 18000 - 20000 death cases [7]. Rabies is 100% preventable through timely administration of post-exposure prophylaxis (PEP) to bite victims. WHO along with other major International agencies have established a global united against rabies collaboration to provide a common strategy to achieve "zero human rabies deaths by 2030" [3]. This can be achieved with prompt treatment including anti rabies vaccine along with immunoglobulin.

In India, rabies affects mainly people of lower socioeconomic status and children between 5 & 15 years [8]. Children in India often play near stray dogs and share their food with them which results in frequent bites. Four out of every ten deaths from rabies are in children aged less than 15 years[6]. In our study also, out of 2741 patients, 787 are children. More than 800 vials of RIG were used in three months in GGH, Ongole. This was given not only to patients residing in Ongole but also from its surrounding villages revealing the non availability of RIG in primary health centers (PHCs). Dog bites are more common in rural areas where RIG is lacking. If ARV is only given it induces antibody after a delay of 10-14 days [9]. Short incubation periods, particularly from bites close to sites containing many peripheral nerves, can allow entry of virus into nervous tissue before formation of antibody. Once the virus enters the nerves, it will be in an immune protected environment[10]. Treatment failures are more common when ARV is only used especially when there are multiple bites or deep punctures at locations where there are many peripheral nerves such as on face and hands [11, 12]. In such conditions, RIG provides passive immunization and is administered only once as soon as possible after the initiation of PEP and not beyond day 7 after the first dose of vaccine. Current WHO guidelines require that a total dose of RIG is calculated based on body weight: 20 IU/ Kg for human RIG, and 40 IU/ Kg for the equine products. As much as is anatomically possible, is to be infiltrated into bite wounds and the remnant is then injected at a distant site intramuscularly[9]. Controlled animal studies demonstrated that antibody is more effective when instilled into wounds than when

inoculated parenterally [10]. So, the RIG injected into bite wounds distinct life from death.

Conclusion

Dog bite is the most common source of rabies among children and lower socio economic status particularly in rural areas. Limited or non availability of RIG in PHCs impedes the accessibility of life saving treatment and increases the risk of rabies. Steps must be taken to ensure the uninterrupted availability of vaccines and RIG in all hospitals including PHCs

References

1. Jackson AC, Wunner Wh. 2007. Rabies 2nd ed, San Diego Academic Press.
2. WHO Expert Consultation on Rabies: second report. Geneva, World Health Organization, 2013 (WHO Technical Report Series, No. 982..
3. Global Elimination of rabies. The time is now. 2015.
4. Rupprecht CE, Plokin SA. Rabies vaccines, In: vaccines, 2012; 6th ed, vol 2, Eds, Plotkin SA, Orenstein WA, offit PA, Scotland: Elsevier, 646 – 668.
5. WHO Expert Consultation on Rabies. 2013; 2: 1-138.
6. WHO. Rabies, Fact sheet 2016. Available from: http://www.who.int/mediacentre/factsheets/fs099/en/
7. Kole, A.K., Roy, R., Kole, D.C. Human rabies in India: a problem needing more attention. Bull. World. Health. Organ, 2014; 92:230
8. Sudharshan MK, Madhusudana SN, Mahendra BJ et al. Assessing the burden of human rabies in India: results of a national multicenter epidemiological survey. Int.J.Infect.Dis 2007; 11:29-35.
9. WHO, Expert Consultation on Rabies Technical Report Series 982. 2012, Geneva: WHO.
10. Hemachudha T, Ugolini G, Wacharapluesadee S, Sungkarat W, Shuangshoti S, Laothamatas J. Human rabies: neuropathogenesis, diagnosis, and management. Lancet Neurol. 2013 May; 12(5):498-513.
11. Wilde H. Failures of post-exposure rabies prophylaxis. Vaccine 2007; 25:7605-7609
12. Wilde H, Lumlertdacha B, Meslin FX, Ghai S, Hemachudha T. Worldwide rabies deaths prevention. A focus on the current inadequacies in postexposure prophylaxis of animal bite victims. Vaccine 2016; 4(34):187-9.