ABSTRACT

There is absence of a nationally representative epidemiological data on rabies in India when it is re-emerging as a major global public health problem. This deadly disease, mainly transmitted by terrestrial animals, has been entirely eliminated in few developed countries. Rabies infected dogs is the major risk factor in human rabies deaths in most of the developing countries of Asia amounting to more than 90 percent cases. Everyone by nature on earth is in persistent, frequent or increased danger of exposure to rabies though this disease is unique in pathogenesis to prevent clinical disease by judicious vaccination even after exposure to agent virus. Only the vaccination of domestic and peri-domestic animals can prevent the disease for citizen at large living in or visiting high risk regions. In India people most at risk live in rural areas, where human vaccines and immunoglobulin are not readily available or accessible. Rabies should be declared as a notifiable disease in India along with launching of a programme embedded with an organized surveillance system forthwith for updated data.

Keywords:

Prologue:

Recent increases in human rabies deaths in parts of Africa, Asia and Latin America suggest that rabies is re-emerging as a major global public health issue. Rabies is a neglected zoonosis that affects poor and vulnerable populations whose deaths are rarely reported as once symptoms develop, rabies is virtually fatal. India has more deaths from rabies than any other country and remains an avoidable cause of death. It occurs mainly in remote rural communities where measures to prevent dog to human transmission is yet to be put into operation leading and gross under-reporting prevents mobilization of resources for post-exposure vaccination (PEV) from the national as well as international communities. [1]

Global scenario

Rabies is widely distributed in more than 150 countries and territories. In the United States, animal control and vaccination programs have effectively eliminated domestic dogs as reservoirs; so also in Australia, Japan and England. In spite of being a vaccine-preventable disease it causes more than half lac of global annual human deaths; 95 percent of these occur in Asia and Africa potentially threatening over 3 billion people. Bites by rabid domestic dogs are the risk factor for 99 percent spells though numerous animal species are implicated even in natural state of affairs; a number of bat species has been noted to transmit rabies or rabies-related virus in south-east Asia. Rabies mostly affects children and adolescents less than 15 years; PEV is provided to 40 percent of Asian kids in the 5–14 years age group, and the majority of them are male. Every year, more than 15 million people worldwide receive a post-exposure vaccination (PEV) to save hundreds of thousands human life after being exposed to animals suspected of rabies. [1, 2, 3, 4]

Price and value

In the United States human rabies deaths are rare, yet the estimated public health costs associated with detection, prevention, and control exceed $300 million annually. These costs include advocacy, animal vaccination and control programs, maintenance of research laboratories, and implied medical expenses, such as those incurred for PEV that is projected to be for 40,000; escalating with rabies regional epizootic or enzootic. A course of rabies immune globulin and five doses of vaccine over a 4-week period on average cost $1,000; the cost per human life saved ranges from $10,000 to $100 million, depending on the nature of the exposure and the probability of rabies in a region. [5]

Even poor people have to bear an average cost of PEV after contact with a suspected rabid animal as US$ 40 in Africa and US$ 49 in Asia compared to the average daily income of around US$ 1–2 per person. Rabies deaths in Africa and Asia amounts to 1.74 million disability-adjusted life years (DALYs) loss per year with the estimated annual cost of US$ 583.5 mil-
In the United States, since the widespread vaccination of domestic dogs and cats and the development of effective human vaccines and immunoglobulin treatments, the number of recorded human deaths from rabies has dropped from 100 or more annually in the early 20th century to one to two per year, mostly caused by bat bites, which may go unnoticed by the victim and hence untreated. Over the last 100 years, rabies in the United States has changed dramatically. More than 90 percent of all animal cases reported annually to Center for disease control (CDC, Atlanta, USA) now occur in wildlife; before 1960 the majority was in domestic animals. The principal rabies hosts today are wild carnivores and bats. Modern day prophylaxis has proven nearly 100 percent successful. In the United States, human fatalities associated with rabies occur in people who fail to seek medical assistance, usually because they were unaware of their exposure. [5]

Indian scenario

Rabies had been acknowledged by Indian physicians since time immemorial, earlier than Aristotle documented it in the Greco-Roman period. The ancient Vedic text ‘Sushruta Samhita’ described rabies in men and animals: "If the patient becomes exceedingly frightened at the sight or mention of the very name of water, he should be understood to have been afflicted with Jala-trisia (hydrophobia) and be deemed to have been doomed”. World Health Organization estimated in 2002 that rabies caused nearly 60 percent (30,000) of the estimated global human deaths per year in India. The first in-depth study based upon a nationally representative sample of deaths rather than modeling or from extrapolation from selected focal surveillance in the ongoing Million Death Study estimated rabies mortality in India. By using verbal autopsy an estimate on the age-specific mortality rates of symptomatically identifiable furious cases in geographic and demographic strata was made. [1, 2] 181 in 2010 and 253 in 2011. The 74-country World Rabies Day (WRD) was first organized in the year 2002 and has since been held annually to promote awareness about rabies and its prevention. September 28, World Rabies Day: 28 September

The 74-country World Rabies Day (WRD) was first organized by the two founding partners Alliance for Rabies Control (ARC) and Centre for Disease Control and Prevention, Atlanta (CDC), on 8 September 2007 with the co-sponsorship of the World Health Organization (WHO), the World Organization for Animal Health (OIE) and the Pan American Health Organization (PAHO/AMRO). Activities organized by WHO Regional Offices and by WHO Collaborating Centres were contributing to the overall aim of the WRD: raising awareness about the impact of human and animal rabies, its easy prevention, and how to control and to eliminate the disease in animals and humans. September 28, 2011 marked the fifth year anniversary of the World Rabies Day Campaign; the single largest concerted effort to raise global awareness about rabies and its prevention to educate by easily translated materials using electronic media, em
powered people in 85 countries. Since WRD inaugural campaign in 2007, rabies vaccination clinics protected 7.7 million animals and educated 182 million people. These remarkable feats would not be possible without the support of global community including followers, advocates, sponsors and outreach partners since 2007 to explore creative ways of raising even more awareness to ensure that governments, policy makers and key opinion leaders can no longer neglect rabies. [14, 15]

‘Open secret’

In developed countries the control has been achieved by adapting rabies as a legally notifiable disease, mass pet vaccination and licensing, routine PEV, tight border control for traveling dogs with a proof of regularly vaccination with a certificate of sufficient rabies antibody titer in the blood; wild rabies from foxes and raccoon dogs is controlled by distributing oral vaccine baits in the forests, and the clean community management of the stray dog population [16].

In India the current control efforts are based on rabies on a yearly basis through an interactive ‘Rabnet’ (e.g. Province, State or District depending on country political/ administrative organization). Rabnet offers basic information resources containing ready-made maps, rabies related documents and details of collaborating centres that can be displayed in interactive maps and linked to a broad range of country-specific indicators (population, education and health services) for comprehensive picture. [10, 12, 16]

Think globally, Act locally

Government of India, in collaboration with key partners noted that the main constraint is the lack of a comprehensive national programme and regionally coordinated control efforts with six bordering countries, as done by Sri Lanka and Thailand. National Centre for Disease Control (NCDC) (formerly National Institute of Communicable Disease) launched a pilot project in 2008 in five Indian cities. The effort included training of health professionals in animal-bite management and raising public awareness about PEV through mass media. In collaboration with WHO anti-rabies vaccines and anti-rabies serum are available and capacity building was ensured in the health care outlets to close cooperation with the national animal husbandry department and partners organizations augmenting anti-rabies interventions with RIG as the high mortality in human cases is due to severe shortage to non-existence of RIG that is recommended with the initial dose of vaccine. The effort roped in effectively other organizations like Rabies in Asia Foundation, Association for Prevention and Control of Rabies in India and Animal Welfare Board of India that is promoting Animal Birth Control Programme in major metropolitan cities. Schering–Plough Corporation – a global health-care company –sponsored two projects in 10 villages surrounding Bangalore and Pune, focused on educational awareness and the mass vaccination of dogs. The Centre for rabies-free India by 2020 is contemplating a national programme to control rabies and started dialogue at all levels. [11, 15]

Take home message

Rabies is a nuisance both in developed countries with scattered cases causing fright and in developing countries where control dog rabies is hard to pin down. We can prevent rabies after known exposure, still our knowledge on the pathogenesis or the mechanism of protection is incomplete. The epidemiology of human rabies is a replica of the epizootiology of the disease. From the public health approach, the dog or other canine species are important vector for most human cases in Asia, Africa, and Latin America in contrast to the developed world. So, the interruption of transmission lies in the vaccination of animal reservoirs among domestic and peri-domestic animals. [17]

REFERENCES