Fox Rabies in India

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(See the article by Matha and Salunke on pages 611–3)

The article by Matha and Salunke [1] offers a glimpse into the real world of rabies from a country where there are at least 20,000 deaths associated with human rabies and ~1.4 million postexposure treatments for human rabies per year. At least 60% of these treatments include the use of dangerous and poorly immunogenic nerve-tissue (sheep brain)–derived Semple vaccines without the use of rabies immunoglobulin. The number of animal-bite victims who are not given any postexposure prophylaxis is unknown, but large. Most of these untreated cases are the result of ignorance; people seeking traditional herbal remedies; poverty; and fear of Semple vaccination, which requires 17 daily subcutaneous injections and commonly induces adverse reactions.

The animal primarily responsible for rabies transmission to humans in India is the dog [2]. Wildlife plays a much lesser but not insignificant role in transmission, as pointed out by Matha and Salunke [1]. It has been reported that rabies in India is the result of contact with dogs in >96% of cases, jackals in 1.7%, cats in 0.8%, monkeys in 0.4%, mongooses in 0.4%, and foxes in 3% [2]. Cases of rabies caused by contact with cows and horses have also been observed and are thought to be due to spill-over from rabies in dogs. It is not known whether there are separate sylvatic rabies cycles in India, and we have seen no reports of systematic efforts to sequence and identify different lyssaviruses.

One must remember that rabies is not even a reportable disease in India, which appears to have one of the highest prevalences in the world; data reported to the World Health Organization (WHO) are largely anecdotal. Few rabies deaths are investigated with laboratory procedures, and testing, if done, is usually performed using the Seller’s stain method. We know of only 4 laboratories that use the WHO’s recommended fluorescent antibody test to diagnose rabies.

Molecular-analysis studies, which might give us some insight into the dynamics of the spread of rabies in India, have not yet appeared in peer-reviewed journals. Molecular-analysis epidemiological investigations in Thailand have showed that all rabies viruses collected from humans, canines, and other mammals from infected humans, canines, felines, or wildlife from Thailand were not grouped as a unique clade. This suggests that the dog remains the prime source for spillage to other species. However, a recent survey of bats indicated that there is another yet unidentified lyssavirus (i.e., not genotype 1) present in bats in Thailand [5]. Similar studies in India will surely reveal interesting data that may eventually have applicability to control measures for rabies.

The number of patients reviewed by Matha and Salunke [1] is small, making it impossible to cite their research as conclusive evidence of the immunogenicity and efficacy of purified Vero cell rabies vaccine. Nor can it be cited as evidence that treatment with vaccine alone, without rabies immunoglobulin, is effective, even though 11 subjects survived who had severe fox bites and were given only vaccine. More than 1 fox may have been involved in these attacks, which occurred in several districts over a period of 1 week. None of the foxes was confirmed to be rabid by laboratory testing, although rabies was very likely, considering the circumstances. The 2 patients who died received only vaccine and no rabies immunoglobulin. Eleven other patients, who presumably had severe bite wounds, also did not receive immunoglobulin, yet they survived. Only 6 patients were given optimal treatment using tissue-culture vaccine and immunoglobulin injected into and around the bite wounds, as recommended by the WHO, the US Centers for Disease Control and Prevention, the Thai Red Cross, and the Thai Ministry of Public Health. All 6 patients survived. The level of neutralizing antibodies showed an acceptable rise and long-term persistence after vaccination.
The report by Matha and Salunke [1] certainly suggests that the purified Vero cell rabies vaccine (potency, 7.56 IU per dose) administered intramuscularly was effective in this series of patients, particularly when combined with rabies immunoglobulin injected into and around bite wounds.

Control of rabies in dogs, the principal vector in Asia, has been extremely difficult in India because of religious and cultural barriers, lack of will by civil authorities, and inadequate funding. The dog must remain the primary focus of all efforts. Controlling rabies in wildlife, if it is proven to represent a problem, would be a formidable goal for India. The hot climate, which could degrade vaccine baits rapidly, would make oral vaccination of foxes and other carnivores very difficult. There is an urgent need for more education of the public in countries where rabies is endemic and for better provision of competent, free postexposure prophylaxis against rabies.

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References