

Ethical issues in rabies prevention

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Rabies continues to be a major problem in India even as we enter the 21st century without clear national policies for its control, in contrast to the progress made by most other countries in Asia. It is believed that more than 50 per cent of all rabies cases worldwide occur in India. Our neglect of rabies may be a matter of lack of political will or of professional competence and dedication of the public health leadership; it is also a matter of great concern from the point of view of violation of ethics and human rights. This latter issue is the subject of this essay.

Elements of rabies prevention

The main elements of rabies prevention are control of rabies in dogs and cats, control of stray dogs in human habitats, post-exposure vaccination of persons after animal bites and pre-exposure vaccination of persons at risk. Most owners of indoor (dog and cat) pets get them vaccinated against rabies. Domestic outdoor dogs and cats are owned usually by less affluent families and their vaccination is often neglected. These animals are more likely to come in contact with stray animals and are at greater risk of rabies than are indoor pets. Stray dogs and cats are the main vectors maintaining rabies virus circulation within human communities. Infection among them is replenished from the sylvatic cycle of rabies virus, about which no serious studies have been conducted in recent decades (1).

Controlling stray dogs

The problem of stray dogs has been accentuated by a government directive to exercise restraint in catching and destroying them. Many places report an increase in the stray dog menace and civic authorities are not taking action. The government is responsible for both animals' humane treatment and

people's protection. If the two conflict, the government must sort things out; perhaps only judicial involvement might clarify this conundrum. Animal bite victims can and must take this matter to the courts.

Stray animals need not be destroyed to control rabies; they could be caught and sterilised or vaccinated, preferably both. Only after the responsibilities of the different arms of the government are clarified can we expect action from civic authorities.

Rabies vaccines for post-exposure vaccination

All civilised countries except India use safe rabies vaccines, but India continues to use the unsafe and obsolete adult animal brain rabies vaccine. The Semple vaccine is named after the British director of the Central Research institute (CRI) at Kasauli, who developed the technique of preparing it at the turn of the 20th

Adult animal brain vaccine is unfit for human use

century. The Semple vaccine replaced the Pasteur vaccine which was made in rabbit spinal cords. Due to its inherent defect of containing large amounts of myelin protein, it induces an allergic encephalomyelitis (AEM) in some vaccine recipients. For this reason, most countries outside Asia adopted other methods to grow the vaccine strains of rabies virus in duck embryo, new-born mouse brain (which has very little myelin) or cell cultures. Today all countries (except India) that used the Semple vaccine have switched to either cell culture or purified duck embryo vaccines; countries such as Vietnam use infant mouse brain vaccine.

The ethical issue of vaccine safety

Two recent developments must be mentioned here. The rotavirus vaccine

was recently found to be associated with the development of intussusception in a rare vaccine recipient infant. Although it is an easily treatable condition, and though the vaccine gives excellent protection against death due to diarrhoea and dehydration, the Food and Drug Administration of the USA directed that the vaccine is unsafe for human use. By definition a vaccine must be safe even if not completely effective.

The second issue concerns the Sabin oral polio vaccine. The USA and several European countries discontinued its use because it is not completely safe, and a safe alternative vaccine is already available in the form of enhanced potency injectable polio vaccine (eIPV). The paralytic response to the vaccine (vaccine associated paralytic poliomyelitis) occurs in one of 400,000 subjects.

AEM occurs in one in some 5,000 to 7,000 vaccine recipients. In other words, the risk of a serious and often life-threatening neuromuscular episode from the Semple vaccine is nearly 100 times that of the Sabin vaccine. Thus, adult animal brain rabies vaccine is unfit for human use and only shameless and callous societies would continue to use it. It is unethical to inject it to any human being, since several safe rabies vaccines are available since the 1970s. I understand that the government under the late Rajiv Gandhi had decided to manufacture rabies vaccine in Vero cell culture. Reportedly, work including the construction of buildings, procurement of equipment and training of personnel were virtually completed when the project stopped about two years ago. If true, the ethical issue is even more serious, since the decision to provide an alternate vaccine was taken and then shelved.

Ethics versus economics of Semple and other rabies vaccines

The request to discontinue the Semple vaccine and replace it with a safe vaccine has been debated in several

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conferences. The government's response is that it cannot afford cell culture vaccines. The following public sector institutions manufacture Semple vaccine: CRI Kasauli; Pasteur Institutes at Coonoor and Shillong; Haffkine Biopharmaceutical Corporation, Mumbai; King Institute, Chennai; Institute of Preventive Medicine, Hyderabad; Vaccine Institutes at Belgaum and Baroda. It is estimated that 3 million persons get post-exposure rabies vaccine annually in India (2). It is prepared in the brains of adult sheep, after which the carcass and hide are discarded. Since its shelf life is only six months, a huge quantity gets discarded each year on account of time expiry.

No one seems to have costed this operation. The excuse that it is cheap cannot be accepted without evidence. The government may well be spending more than what it might take to manufacture an equivalent amount of cell culture vaccine. Cell culture vaccine has a shelf life of at least two years, hence wastage would be minimal; the volume and number of injections are fractions of what are used with the Semple vaccine; perhaps two or three manufacturers can produce the total amount; it is an exportable product. Moreover, the government needs to provide free vaccinations mainly in public hospitals. In private hospitals, most people would pay its cost. However, the government could subsidise the cost of vaccine to the amount saved by the current expense for manufacturing Semple vaccine in the eight centres listed above.

Many major hospitals see several patients each year with AEM following vaccination with the Semple vaccine. In some instances, the vaccine was given without necessary indication, amounting to medical negligence; however, the victim was not compensated or even treated free of cost. In other instances the victim was not taken back in the same place where the vaccine was given. In most cases, the subjects had not been counselled or at least warned about the risk of AEM, nor a choice offered, once again amounting to negligence. In some instances, vaccination was continued

despite the subject complaining of early symptoms of reaction. In many instances, the Semple vaccine had been given in full doses to those who had taken a full course in the past. This also is medically prohibited, and amounts to medical negligence.

All these unethical practices go on under the excuse that the vaccine is given free by the government. Most victims are not highly educated or conscious of their human and legal rights and do not have the confidence or finances to go to court. But if the authorities do not see these issues correctly, one court case from a victim of AEM would change the situation.

Some practical recommendations

The Indian Academy of Paediatrics had already strongly recommended to the government to discontinue the use of the Semple vaccine beyond this year (3).

It must be understood that injecting myelin-containing vaccine is a violation of human rights and an unethical practice and should be stopped forthwith after making alternative arrangements for sufficient safe vaccine.

The extraordinary concern for animal welfare recently shown by the government must be extended to the hundreds of thousands of sheep sacrificed for vaccine production. There is both need and opportunity to substitute cell culture for whole animal. What is being preached must be practiced by the government and must be seen to be implemented.

The government must revive the project to manufacture Vero cell based rabies vaccine either in the public or in the private sector. The existing company in India producing rabies vaccine in chick embryo cell culture could be funded for expansion. A second manufacturing company has just been approved to produce Vero cell based vaccine. In other words, we are not incapable of producing safe vaccines in India. The details of subsidy and equity in distribution of vaccine in public hospitals must be quantified and established by

competent agencies without any delay.

Medical personnel must be given clear guidelines for the correct use of rabies vaccines. The Semple vaccine is overused because it is free; cell culture vaccine must be used only according to strict protocol. This will reduce the number of persons vaccinated. In hospitals with a large attendance of dog bite victims, cell culture vaccine may be used in fractional doses given intradermally, to reduce costs (4).

The appropriate wing of the government must assume responsibility for the safety of children and adults in public places such as streets, from animal bites. It is probably cheaper to prevent stray-dog bites than to provide cell culture rabies vaccine to bite victims. The responsibility for such safety must be entrusted with the local administration without interference from above.

Can we imagine the consequence if every dog bite victim and the family of every victim of rabies or AME due to the Semple vaccine approached the courts for the legitimate redressal of their grievances? Do we not have sufficient national pride not to count a few rupees against safe biologicals? And remember, we are a nuclear power nation, no longer a poor nation vulnerable to enemy attack. Is not rabies our enemy too?

References:

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