Rabies Treatment: Are We Anywhere Close to Cure?

Sir,

In the case report on rabies, Bawaskar *et al*.[1] had attempted novel therapeutic agents to find a protocol for curative treatment but it was a disappointment. However, they highlighted various molecular mechanisms to explain the symptoms and signs.

In the Western world, the management of dog bite is centered on prevention of infection from organisms present in the oral cavity of the animal. However, in India and South-east Asia, the crucial concern is combating the possibility of rabies, since once the disease sets in, it is predictably fatal. A cure for rabies would be a great boon for the developing world.

Milwaukee protocol gave initial hope that some component of the therapy might actually have therapeutic efficacy in human rabies. However, multiple efforts to replicate this expensive and intense protocol have not been successful. Numerous therapies for established rabies based on the molecular mechanisms have been implemented but, one could not succeed as on date and unmet medical needs.

Hueffer *et al*.[2] noticed that the glycoprotein of rabies virus has homology with snake toxin (venom), which alters the behavior of animals through inhibition of nicotinic acetylcholine receptors present in central nervous system. Thus, it is clear that the virus-receptor interaction and host manipulation by pathogens might have contributed to behavioral changes in rabies.

Earlier work in rabies has shown that a number of isomers of host protein kinase C are responsible for phosphorylation of protein P, specifically α, β, γ, and δ, with γ appearing to be the most effective of these isoenzymes. These kinases may be differentially inhibited either by staurosporine or heparin. Apart from the above, we would like to mention that Gupta *et al*.,[3] also identified a γ-protein C kinase that appeared unique to rabies-infected cells, designated rabies virus protein kinase, and which was inhibited by heparin: It appears that rabies virus protein kinase is present in purified virions, likely indicating a critical role in the viral life cycle. Since, tamoxifen, midostaurin, and heparin inhibit protein kinase one has to find out the applicability of these molecules or modified ones in the treatment of rabies.[4]

These newer explanations have given confidence that in future natural molecules derived from snake venom/toxin or modified molecules might revert the effects of rabies or prevent the progression of disease. Overall, it is clear that more we understand the molecular mechanisms of a disease; we are likely to introduce newer therapeutic agents more. At the same time, there is need for continued vigilance and public awareness, education of health-care workers, and prevention with early post-exposure prophylaxis when indicated, all of which are proven to prevent clinical rabies.[5]

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Conflicts of interest

There are no conflicts of interest.

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