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]

Financial support and sponsorship
Nil.

Conflicts of interest
There are no conflicts of interest.

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Symmetrical Gangrene in Both Lower Limbs in Pneumococcal Pneumonia

arterial and venous Doppler scan revealed reduced velocity of jet in bilateral lower limbs. Blood culture was positive for Streptococcus pneumoniae after 48 h of incubation which was sensitive to ceftriaxone, azithromycin, linezolid, vancomycin, and levofloxacin. He was started injection ceftriaxone 1 g intravenous (IV) twice a day, and injection azithromycin 500 mg IV once a day with supportive treatment. Within 24 h his condition improved and later on, he was discharged on oral antibiotics. However, during subsequent outpatient visits, the patient presented with well-demarcated gangrene of all the toes for which he underwent below ankle amputation [Figure 2].

Sir,

Symmetrical peripheral gangrene (SPG) is a well-documented but rare clinical syndrome characterized by symmetrical distal ischemic damage leading to gangrene of two or more sites in the absence of large vessel obstruction or vasculitis.[1] Herein, we present a case of SPG due to Streptococcus or pneumococcal pneumonia.

A 35-year-old male presented to our hospital with complaints of high-grade fever of 10 days along with cough and expectoration. He also noticed bluish discoloration of his toes which progressively increased up till his bilateral knees within the next 5 days. He was diagnosed as a case of upper respiratory infection and was given symptomatic treatment for 6 days at a private clinic with no relief. Hence, he has referred to our hospital. On examination, bilateral lower limbs with bluish discoloration of toes and ankles were noted along with tender pitting edema [Figure 1]. Anterior tibial artery, posterior tibial, and dorsalis pedis artery were not palpable in both lower limbs [Table 1]. Respiratory examination revealed bronchial breath sounds with crackles on inspiration in the right infrascapular area.

Laboratory tests revealed hemoglobin 12.5 g/dL of hemoglobin with a total leukocyte count of 29,000 cells/mm3 with normal platelet and differential counts. Kidney and liver function tests were within normal limit. Chest X-ray revealed a homogeneous opacity in the right lower zone with syn-pneumonic pleural effusion. Lower limb