

Dog bite and antirabies vaccination: What the anaesthesiologist needs to know

Sir,

Human rabies is a serious health problem in developing countries like India. The transmission of the disease is frequently associated with dog bites. Post exposure prophylaxis (PEP) of rabies vaccine as recommended by the World Health Organization is spanned over 30 days, with vaccination on 0, 3rd, 7th, 14th and 30th day. Surgery and anaesthesia in a patient receiving PEP creates dilemma. Elective surgery may be postponed due to possibility of reduction in efficacy of antirabies vaccine (ARV) due to immunosuppressive effects of anaesthesia and surgery. Emergency surgeries need to be dealt keeping in mind immunomodulatory effects of anaesthesia and surgery interfering with benefits of ARV.

Written, valid and informed consent was taken for sharing this case. We report a case of a 19-year old primigravida with 39 weeks of gestation with pregnancy induced hypertension receiving PEP with ARV posted for emergency cesarean section (CS). She gave a history of stray dog bite 11 days back. She had taken two doses of Inj. Rabipur (inactivated rabies virus vaccine) on day 0 and day 3. The third dose was missed as the patient was transferred from her village to a city hospital in view of recently diagnosed pre-eclampsia.

Considering history of ARV, we planned general anaesthesia (GA) for the emergency CS. In the

operating room, after applying standard American Society of Anesthesiologists (ASA) monitors, rapid sequence induction of anaesthesia was carried out with injection thiopentone sodium 5 mg/kg and succinylcholine 2 mg/kg intravenously followed by tracheal intubation. Anaesthesia was maintained with oxygen, nitrous oxide, sevoflurane, vecuronium and fentanyl. She received bilateral ilioinguinal and iliohypogastric blocks for post-operative analgesia. Rest of the perioperative course was uneventful. The patient had a remarkable recovery and was discharged on the fifth postoperative day. She was advised to continue and complete the ARV as per the schedule.

Rabies, a disease caused by the ribonucleic acid (RNA) virus of the Rhabdovirus group resulting in serious and fatal infection primarily affecting the central nervous system causing encephalitis or meningoencephalitis. Rabies PEP will prevent further worsening and neurological manifestations of rabies. PEP extends over a period of one month and patient may need surgery during this interval. There is no direct evidence of any major interactions between PEP and anaesthetic agents and techniques except ketamine. Ketamine has been demonstrated to decrease vaccine efficacy.^[1] Nevertheless, surgery and anaesthesia suppress the immune system and may interfere with benefits of vaccination.^[2] It is recommended to postpone elective surgery for one week after an inactive vaccine and three weeks after immunisation with a live vaccine.^[3]

In our case scenario, surgery being emergency CS had to be undertaken in spite of vaccination a week ago. The various options available for anaesthesia

management included spinal anaesthesia (SA) and GA.^[4] Considering history of vaccination, we opted for GA. There was a risk of GA influencing the immune system and probability of reduction in efficacy of vaccine due to its immunosuppressive consequences. However, neuraxial anaesthesia may have medicolegal implications. V. Rewari *et al.*,^[5] reported a case of intertrochanteric fracture femur done under neuraxial anaesthesia in a patient who was receiving ARV. The authors concluded that use of regional anaesthesia in patients receiving ARV needs further evaluation. Dassanayake AS reported a case of acute flaccid paralysis following spinal anaesthesia for a patient on PEP with ARV who underwent inguinal hernia repair and orchidopexy.^[6] The main concern expressed by the author in this case was probability of reduction in efficacy of the vaccination due to immunosuppressive effect of anaesthesia and surgery. Rabies presentation with neurological manifestations can mimic neurological complications of the regional anaesthesia. This may create a diagnostic dilemma and medico-legal implications. Thus, it is important to document the history of dog bite, status of vaccination and explain possible consequences of anaesthesia and surgery to the patient.

Choice of anaesthesia will need to be individualised depending upon status of surgery and considering possible consequences of GA and SA in patients receiving ARV.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the legal guardian has given his consent for images and other clinical information to be reported in the journal. The guardian understands that names and initials will not be published and due efforts will be made to conceal identity, but anonymity cannot be guaranteed.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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Submitted: 16-Feb-2021

Revised: 29-Mar-2021

Accepted: 07-May-2021

Published: 25-Aug-2021

REFERENCES

1. Fescharek R, Franke V, Samuel MR. Do anaesthetic and surgical stress increased the risk of post exposure rabies treatment failure? *Vaccine* 1994;12:1150-1.
2. Kumar A, Sadashivan S, Sethi AK. Anaesthesia-immune system interactions: Implications for anesthesiologist and current perspectives. *Indian J Anaesth* 2002;46:8-20.
3. Bertolizio G, Astuto M, Ingelmo P. The implications of immunization in the daily practice of paediatric anaesthesia. *Curr Opin Anaesthesiol* 2017;30:368-75.
4. Upadya M, Rao ST. Hypertensive disorder in pregnancy. *Indian J Anaesth* 2018;65:675-8.
5. Rewari V, Garg R, Trikha A. Rabies vaccine and neuraxial anaesthesia. *S Afr J Anaesthesiol Analg* 2010;16:32-4.
6. Dassanayake AS. Acute flaccid paralysis following spinal anaesthesia: A diagnostic dilemma. *Sri Lankan J Anaesthesiol* 2016;24:46-8.

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Access this article online	
Quick response code	Website: www.ijaweb.org
	DOI: 10.4103/ija.IJA_113_21

How to cite this article: Ghodki P, Katikar M, Kulkarni P. Dog bite and antirabies vaccination: What the anaesthesiologist needs to know. *Indian J Anaesth* 2021;65:632-3.

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