

Enhanced risk of needlestick injuries and exposure to blood and body fluids to cardiac anesthesiologists: Need for serious introspection

Murali Chakravarthy

Department of Anesthesia, Critical Care and Pain Relief, Wockhardt Hospitals, Bannerghatta Road, Bangalore-560 076, India

DOI: 10.4103/0971-9784.58826

The operation theatre (OT) is where needle stick injuries (NSIs) and blood and body fluid exposure (BBFE) occur with regular frequency. Up to a fifth of all healthcare associated sharp injuries occur in the OT^[1] and therefore it is logical to suppose that surgeons suffer from occupational related NSIs and BBFE while at work. It is estimated that a surgeon in practice for 10 years has a 95% chance of suffering from sharp injuries, most of which are self inflicted.^[2] Measures such as use of blunt needles, using diathermy to cut instead of knife have been suggested to avoid injuries among surgeons and surgical nurses.^[3, 4]

However, a little known fact is that anesthesiologists akin to other healthcare workers are also at a greater risk of exposure to NSI and BBFE as they deal with needles and other sharps more frequently than most other physicians on a day to day basis. Very few authors have studied the incidence and pattern of NSI and BBFE occurring to anesthesiologists. Greene and coworkers analyzed multicentric data collected from anesthesia personnel over two years to understand this concept in eleven hospitals.^[5] They observed that out of 138 NSIs, 74% were associated with blood-contaminated hollow-bore needles, an equal percentage of injuries were potentially preventable, and 30% were considered high-risk injuries from devices used for intravascular catheter insertion or

obtaining blood. Yet another study by the same workers showed that nearly half the injuries reported by anesthesiologists were moderate (some bleeding) or severe (deep injury with profuse bleeding), and most were to hands.^[6] It is known that more the severity of the injury, higher is the chance of disease transmission. With the above evidence, it is clear that the community of anesthesiologists is susceptible to the occupational hazards of NSIs. However, the prevalence of BBFE among anesthesiologists does not clearly emerge from these studies. Every anesthesiologist will recall at least a few occasions of spillage or splash of blood and body fluids on their face, hands, feet, and the other parts of the body. Most of these incidents either go unreported or are neglected by the victim himself as 'nothing out of the ordinary'. The underreporting is not restricted to hospitals with lower standards for safety; on the contrary it is a global phenomenon.^[1]

NSIs and BBFE are the most common causes of disease transmission among anesthesiologists.^[7,8] It is said that the most likely transmission source to anesthesiologists of hepatitis C is from their accidental exposure to the blood of patients infected with it.^[7] In a survey of dental anesthesiologists, of the 101 respondents, 41 had at least one percutaneous accident (89 accidents in total), and the projected mean annual injury rate dental anesthesiologists overall was 1.82

Address for correspondence: Dr. Murali Chakravarthy, Department of Anesthesia, Critical Care and Pain Relief, Wockhardt Hospital, Bangalore, India.
E-mail: mailchakravarthy@gmail.com

per anesthesiologist.^[8] Despite the various reports, anesthesiologists do not seem to be very concerned about the possible threat to their lives and safety caused by this serious occupational hazard. In many countries (even developed ones), the use of protective devices is not yet a federal requirement.

It is hard to find substantial data (apart from those mentioned above) or literature exclusively dedicated to anesthesiologists, NSIs and BBFE. In this editor's view, cardiac anesthesiologists are likely to be at a greater risk of exposure to sharp injuries and BBFE than those working in noncardiac OTs as the number of invasive monitoring lines, blood, and blood product usage and handling blood circulating in extracorporeal circuits is more among them, as compared to noncardiac anesthesiologists. A modest estimate of the number of hypodermic needles used during anesthesia in a cardiac case is about one hundred per case. An additional risk of blood spillage arises out of handling blood and blood products during transfusion in cardiac cases. The use of blood filled extracorporeal circuit tubing in the cardiac OTs, cannulation of great vessels and ventricular chambers (aorta, pulmonary artery and the ventricles) exposes the cardiac team to a greater chance of exposure to blood spills. Additionally, a cardiac surgeon might inadvertently cannulate the aorta with loosely connected protective cap on the aortic cannula, which inevitably leads to a blood splash on to the face of the anesthesiologist at the head end. Similarly, the inadvertent perfusion of extracorporeal blood through clamped tubing might result in 'rupture' of the circuitry thus causing a splash of blood on all around – not an unknown event in cardiac theatres. Also, at times of extreme hemodynamic compromise when emergency cardiopulmonary bypass needs to be instituted, several unforeseen errors in safe practice creep in, increasing the risk of exposure. At such times, the physicians might neglect their own safety while keeping the patient safety as top priority. It has been shown that a splash of blood on the face (and conjunctiva) is very dangerous and is akin to vascular exposure of microorganisms.^[9] One of the commonest sources of hepatitis C among healthcare workers in the OT is through conjunctiva.^[10] Currently, the problem of NSIs and BBFE does not attract the due importance that it deserves. Many anesthesiologists may not even

be aware of basic preventive strategies like universal personal protective gears, avoiding recapping of needles, immediate after – use disposal of sharps into sharp container and proper medical waste disposal.

It is time that anesthesiologists acknowledge the seriousness of the matter and protect themselves – firstly by vaccinating themselves against hepatitis B (the only viral infection transmitted to health care workers that may be prevented by vaccination) and secondly, by encouraging the practice of the protective mechanisms such as use of safety engineered products (safe intravenous cannulae), appropriate disposal of sharp items used by them, and routine use of protective gears (goggles and appropriate foot wear). It is uncommon for anesthesiology societies to discuss such topics at their annual conferences. Improved awareness should be brought about by discussing this topic not only in anesthesia conferences but also by inculcating the same in the syllabus of anesthesia trainees. It is about time for the fraternity of anesthesiologists to introspect and take preventive actions lest lives of talented anesthesiologists be lost.

REFERENCES

1. Jagger J, Perry J. Power in numbers: Using EPINet data to promote protective policies for healthcare workers. *J Infus Nurs* 2002;25:S15-20.
2. Lopez RA, Rayan GM, Monlux R. Hand injuries during hand surgery: A survey of intraoperative sharp injuries of the hand among hand surgeons. *J Hand Surg Eur* 2008;33:661-6.
3. Catanzarite V, Byrd K, McNamara M, Bombard A. Preventing needlestick injuries in obstetrics and gynecology: How can we improve the use of blunt tip needles in practice? *Obstet Gynecol* 2007;110:1399-403.
4. Sullivan S, Williamson B, Wilson LK, Korte JE, Soper D. Blunt needles for the reduction of needlestick injuries during cesarean delivery: A randomized controlled trial. *Obstet Gynecol* 2009;114:211-6.
5. Greene ES, Berry AJ, Jagger J, Hanley E, Arnold WP 3rd, Bailey MK, *et al.* Multicenter study of contaminated percutaneous injuries in anesthesia personnel. *Anesthesiology* 1998;89:1362-72.
6. Greene ES, Berry AJ, Arnold WP 3rd, Jagger J. Percutaneous injuries in anesthesia personnel. *Anesth Analg* 1996;83:273-8.
7. Jackson SH, Cheung EC. Hepatitis B and hepatitis C: Occupational considerations for the anesthesiologist. *Anesthesiol Clin North Am* 2004;22:357-77.
8. Suljak JP, Leake JL, Haas DA. The occupational risk to dental anesthesiologists of acquiring 3 bloodborne pathogens. *Anesth Prog* 1999;46:63-70.
9. Davies CG, Khan MN, Ghauri AS, Ranaboldo CJ. Blood and body fluid splashes during surgery--the need for eye protection and masks. *Ann R Coll Surg Engl* 2007;89:770-2.
10. Mattner F, Tillmann HL. Proof of alleged transmission of hepatitis C virus by a conjunctival blood splash. *Am J Infect Control* 2004;32:375-6.