Letters to Editor

Pseudoventricular tachycardia due to a silicone tourniquet

Dear Editor,

Electrocardiographic artifacts can occur during general anesthesia, for example, due to electric scalpels. While anesthesiologists often encounter the latter, some medical equipment, such as cardiopulmonary bypass (CPB) and continuous venovenous hemodiafiltration (CVVH), can also occasionally cause artifacts.[1] Here, we report a case of pseudoventricular tachycardia (VT) due to an electrostatically-charged silicone tourniquet, which, to the best of our knowledge, has not been described previously.

Written informed consent was obtained from the parents of this patient for the publication.

A 9-year-old girl underwent general anesthesia with standard monitoring, including pulse oximetry and electrocardiography (ECG), when the ECG suddenly indicated VT before intravenous access had been established during anesthesia induction [Figure 1a]. Due to an artifact, pseudoVT was suspected because pulse wave oximetry was normal. Subsequently, we realized that...
such pseudoVT occurred only when an anesthesiologist preparing to establish intravenous access swung a silicone tourniquet while standing beside the patient (Figure 1b, Eastsidemed Inc., Tokyo, Japan). The waveform also appeared to show atrial flutter (AF) and supraventricular tachycardia (SVT). This phenomenon was observed repeatedly with other patients in other operating rooms at our institution and also at the other institution, this phenomenon disappeared later, as the silicone tourniquets were coated with an antistatic spray (Eleguard; Lion Co., Tokyo, Japan). Thus, the cause of the pseudoVT was identified as the rhythmic movement of the electrostatically charged silicone tourniquet.

While electrocardiographic artifacts due to electric scalpels can occur during general anesthesia, anesthesiologists rarely misdiagnose them as arrhythmia. However, electrocardiographic artifacts due to static electricity caused by friction between the roller pump and circuit of the CPB and CVVH during their rhythmic movement can be fairly easily misdiagnosed as arrhythmia.[2,3] Similarly, abnormal electrical stimulus from an intraaortic balloon pump leading to a misdiagnosis has been described previously.[4]

We describe a case of pseudoVT due to the proximity of an electrostatically-charged silicone tourniquet during induction of general anesthesia. Although swinging a tourniquet right next to a patient is an ethically problematic practice, this phenomenon has implications for anesthesiologists. Silicone tends to generate static electricity upon friction with air, and this phenomenon also occurs under cool and dry circumstances,[2] such as during winter in Japan, when the described incident occurred. The electrocardiographic artifact in our case covered the QRS wave and manifested as a VT-like waveform because an anesthesiologist swinging the silicone tourniquet was standing right next to the patient. This artifact can also appear as an AF- or SVT-like waveform, depending on movement patterns of tourniquet and the distance between the patient and the electrostatically charged silicone tourniquet. Therefore, misdiagnoses and inappropriate interventions in such situations, namely, administration of an antiarrhythmic agent or electrical defibrillation, can be avoided by confirming if pulse wave oximetry patterns and arterial palpation findings concur with those seen on the ECG.

In summary, care must be taken when using electrostatically charged products, such as silicone, and doctors must be aware of their effects on medical equipment, as many silicone products are used in patients with latex allergy.

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Declaration of patient consent
The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient’s parents have given her consent for her images and other clinical information to be reported in the journal. The patient’s parents understand that her name and initials will not be published and due efforts will be made to conceal her identity, but anonymity cannot be guaranteed.

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Conflicts of interest
There are no conflicts of interest.

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Management of leptospirosis in postpartum period in ICU

Sir,

A significant mortality and morbidity is associated with acute liver failure of pregnancy. Liver disease specific to pregnancy include intrahepatic cholestasis of pregnancy, HELLP syndrome, and acute fatty liver of pregnancy. Besides these, viral and bacterial infections during pregnancy are also responsible for undesirable outcomes during pregnancy. Leptospirosis is a rare infection in pregnancy and is often misdiagnosed and underreported. It may present as multiorgan failure and mimic other liver pathologies. Early diagnosis and prompt treatment are necessary for the survival of both mother and fetus.

A 21-year-old, 36 weeks primigravida was admitted with jaundice and intrauterine death of fetus. The positive investigation reports were as follows: total leukocyte count (TLC): 24600/cumm, platelet count: 56000/cumm, total bilirubin: 23.91 mg/dl with direct bilirubin of 16 mg/dl, SGOT: 152 U/L, SGPT: 116 U/L, ALP: 227 U/L, albumin: 2.1 g/dl, PT-INR: 36/3.51, urea: 124 mg/dl, creatinine: 2.86 mg/dl, ammonia: 141 umol/L, and lactate: 7.8 mmol/L. Vitals were stable with no signs of portal hypertension.

Fresh frozen plasma was transfused and PT-INR improved (13/1.28). Injection. Broad-spectrum antibiotic cover with Meropenem 1 g TDS and Clindamycin 600 mg TDS was given.

Abdominal ultrasonography revealed borderline hepatosplenomegaly, ascites, mild left pleural effusion, and bulky uterus with no residual products of conception. Diagnostic ascitic aspiration revealed 8–10 RBC/hpf and 10–20 leukocytes/hpf.

On the third day of ICU admission, the patient was in grade-1 hepatic encephalopathy evident by increased ammonia levels (138 umol/L), for which Lactulose 30 ml TDS was started along with Rifaximin 550 mg BD. The patient developed a fever of 104°F and blood culture was positive for Klebsiella, sensitive to Tigecycline, which was given as loading dose of 100 mg followed by 50 mg intravenously BD. It was suspected to be a nosocomial pathogen considering the long duration of the patient's stay in the hospital. Repeat ascitic tap was acellular. On the fourth day of ICU stay, TLC was 14600/cumm, PLT increased to 1.5 lakh/cumm, Total bilirubin was 8 mg/dl, SGOT was 100U/L, SGPT was 82 U/L, ALP was 220U/L, urea was 67 mg/dl, creatinine was 1.6 mg/dl, ammonia was 86 umol/L, and lactate was 5.5 mmol/L.

After ruling out other infections, Microagglutination test (IgM antibodies) was positive for leptospirosis. Tablet Doxycycline 100 mg BD was given for 7 days through Ryle's tube.

The patient was in ICU for 15 days and was discharged with normal complete blood count and liver enzymes, bilirubin.