Venesection in hypovolemic shock

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ABSTRACT

A 20-year-old female, a referred case, from health post presented to emergency department of Manthali hospital Ramechhap, with history of loose watery stool and vomiting for 4 days. On primary survey examination - Airway; patent with no c-spine tenderness, breathing; no chest retractions, no obvious injury, oxygen saturation was 94% in room air. Pulse was 160 beats per minute, feeble; blood pressure was not recordable; cold clammy and bluish discoloration of skin was noted. Intravenous cannulation was tried but could not succeed. GCS= 15/15, bilateral pupil was round, regular and reactive, there was no focal neurological deficit. Multiple prick mark for intravenous cannulation was seen. With appropriate counselling and consent, vein-section was done. An incision of about three centimeters was given just one centimeter above left medial malleolus. A 16-gauze intravenous cannula was inserted at left long saphenous vein and fixed with prolene 2. Eight pint of warm normal saline and one pint of Haemaccel was transfused. After stabilizing her bluish limbs turned into pink; her sadness turned into happiness. She was referred to higher center and was admitted for 4 days and discharged with a diagnosis of acute gastroenteritis with prerenal acute kidney injury(resolved). Gastrointestinal losses like diarrhea and vomiting can lead into hypovolemic shock which is fatal. Fluid resuscitation is the mainstay of therapy in patients with severe hypovolemia.

Keywords: hypovolemic shock, life does matter, primary survey, venesection

DOI: https://doi.org/10.59284/jgpeman244

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INTRODUCTION

Acute gastroenteritis is defined as the loose watery stool occurring three or more times per day which is rapid in onset that lasts less than two weeks. It may be associated with nausea, vomiting, fever or abdominal pain.[1,2]Major causes of acute infectious diarrhea include viruses (rotavirus, norovirus, adenovirus etc.) bacteria (salmonella, shigella, campylobacteria, etc.) protozoa (cryptosporidium, giardia, Entamoeba etc.). Gastrointestinal losses like diarrhea and vomiting can lead into hypovolemic shock. Establishment of venous access in hypovolemic shock is essential to the treatment. Vene-section is lifesaving procedure in securing intravenous access in rural health care.

CASE REPORT

A 20-year-old female was referred from health post presented at emergency department of Manthali hospital, Ramechhap with history of loose watery stool and vomiting for 4 days. Initially the frequency of loose watery stool was five episodes per day. Later on, the frequency was increased up to 26 episodes per day. Stool consistency is watery, not mixed with blood. She had a history of vomiting which is non-projectile, non-bilious, not mixed with blood, frequency was increased for 2 days. However, there is no history of fever, abdominal pain. She was taken to nearby health post where there was difficulty in opening intravenous access. So, the case was referred to our center where primary survey was done. Airway was patent with no c-spine tenderness. Breathing was normal with no chest retractions, no obvious injury, oxygen saturation was 94% in room air. Pulse was 160 beats per minute, and feeble. Blood pressure was not recordable; cold clammy and bluish discoloration of skin was noted. Establishment of venous access was difficult.

After multiple attempts, venous access could not be succeeded. So, Vene-section procedure was performed after taking consent with relatives. Painting and draping were done at left ankle region (figure A). After knowing the anatomy (figure b), an incision of about 3 cm was given just 1cm above the left medial malleolus under local anesthesia. Skin and subcutaneous tissue were dissected. A great long saphenous vein was visualized and small nick was given and 16 guaze intravenous cannula was inserted and fixed with prolene 2 (figure C). Skin was sutured with prolene 2. After securing intravenous access, eight pint of warm normal saline and one pint of haemaccel was transfused. Foley's catheterization was done and 150ml of urine was drained in urobag.

GCS at the time of presentation was 15/15. Bilateral pupil was round, regular and reactive. There was no focal neurological deficit. Multiple prick mark for intravenous cannulation was seen. After stabilizing primary survey, she was referred to tertiary hospital where relevant investigation was done (Table 1)

She was admitted for 4 days and treated with intravenous fluids, intravenous antibiotics (Injection ciprofloxacin, injection metronidazole). She was discharged with a diagnosis of '' Acute Gastroenteritis with prerenal acute kidney injury (resolved)."

Table 1. Laboratory investigation done at higher center

Tests	Results
Total WBC Count, Neutrophil, Lymphocyte Hemoglobin	8700 cells/cumm, 81 %,16% 11.6g/dl
Urine pregnancy test	Negative
Stool RME	pus cells – plenty, parasite – not seen
Urine RME/ Urine C/S	pus cells – 7-8/HPF, no growth of organism
Urea/Creatinine	101 / 3 → 32/0.5 mg/dl
Sodium/potassium (Na/K)	130/3.5 → 141/4.1 mmol/ltr
Dengue (NS1,IgG,IgM)	Negative
CRP (Quantitative)	75.14 mg/L

Figure A. Painting at left medial malleolus

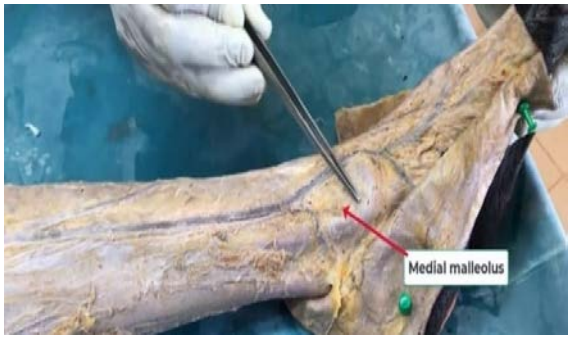

Figure B. Anatomy of Great saphenous Vein

Figure C. Vein-section

DISCUSSION

Gastrointestinal losses like diarrhea and vomiting can lead into hypovolemic shock which is fatal. Major causes of acute infectious diarrhea include viruses (rotavirus, norovirus, adenovirus etc) bacteria (salmonella, shigella, campylobacteria, etc.) protozoa (cryptosporidium, giardia, Entamoeba etc.). Most cases of acute infectious diarrhea are likely due to viral.[3] Establishment of venous access is essential to the treatment and resuscitation of both medically and traumatically ill patient. Fluid resuscitation is the mainstay of therapy in patients with features of hypovolemia. Normal saline (0.9% saline) is an effective and inexpensive initial resuscitation fluid for the management of patients with hypovolemia and hypovolemic shock which is not due to bleeding.[4,5,6,] Large volume resuscitation with 0.9% normal saline can lead into hyperchloremic metabolic acidosis. Seldinger technique, ultrasound guided venous access and intraosseous venous access are an alternative way of establishment of venous access. However, this technique is difficult in hypovolemic shock with collapsed veins. Body habitus, past medical or clinical circumstances make peripheral or central percutaneous intravenous access challenging.[7]

CONCLUSION

Stabilizing body vital parameters is the key to save life. Establishment of vascular access is essential in resuscitative efforts. Anatomy knowledge and technique of peripheral venous cut down may prove lifesaving.

Consent

A signed consent was taken from the patient regarding the publication of the case report.

Conflict of interest

None

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