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Case Report

A tug on belly leading to mesenteric tear

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Introduction

Tug of war (TOW) is a global sport, played with zeal for both recreational purposes and also as professionals. The game, due to involvement of high energies in static and dynamic pulls, is prone to a number of injuries. Though literature suggests high incidence of various types of injuries, which have inspired the governing bodies to make some safety rules, there still exists loose rope for more safety norms to be implemented. We received a case of multiple mesenteric tears, in a life-threatening condition due to massive haemoperitoneum, sustained due to the rope wrapped around the trunk by the person performing the role of an Anchor. To the best of my knowledge, no such case has been reported till date.

Case report

A 46-year-old male patient was brought to the hospital in shock after about half an hour of sustaining abdominal discomfort following a game of “Tug of war”. On enquiry, it

was found that the individual, because of his heavy built and tall stature, had played the role of an ‘anchor’ by wrapping the rope around his belly and chest with one wrap and a knot to pull the rope. General examination showed the patient in hypovolaemic shock (HR: 102/min, BP: 70/40 mm Hg, which had rapidly fallen to 50/30 mmHg). The patient was immediately resuscitated and blood demand was placed. An urgent FAST (Focused Abdominal Sonography in Trauma) had shown large intra-abdominal collection, with no signs of organ injury. The patient was immediately taken up for exploratory laparotomy, as he was unstable. Simultaneously, blood was transfused. On coeliotomy, a haemoperitoneum of approx 3.8 l was seen. There were three mesenteric tears: (a) around jejuno-ileal junction, (b) around 3.5 ft proximal to the IC Jn and (c) in the mesentery of the sigmoid colon. Mesentery was fat laden. No solid organ injury or bowel wall contusion was noted. All the tears were longitudinal with no major vessel involvement or sign of bowel ischaemia (Figs. 1 and 2). After peritoneal lavage; repair of the mesenteric tears was done, with care to prevent ischaemia to the bowel. The patient was transfused with seven units of blood. Post-op recovery was smooth. He was followed up for one year. He did not show any signs of delayed complications of mesenteric tears such as stenosis, and was back to sporting activities.

Discussion

Tug of war is a non-contact sport. It is defined as a contest in which two teams pull at opposite ends of a rope until one drags the other over a central line. It is a contest of strength, stamina and technique. One tactic, which is of importance to our discussion, is the role of the Anchor man. The Anchor man may wrap the rope around his body once. In our case, the Anchor man was chosen for his heavy built and tall stature.

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Fig. 1 – Longitudinal mesenteric tear closer to ileocaecal junction.

TOW is associated with a high incidence of an array of injuries attributable to the energy involved in pulling the rope. In a 2005 study, it is reported that the athletes can generate up to 200% of weight in static pull and 149% in dynamic pull.¹ In a recent review of literature on TOW injuries, the most common injuries reported were (a) back sprain and strain injuries, (b) joint and extremity injuries, while a number of case reports quoted in the study suggested incidence of injuries including elbow dislocations, traumatic amputations, nerve injuries, liver and splenic rupture, etc.² In another report, which covered a major TOW event of Taiwan with 1500 participants, they have reported injuries such as traction avulsion, transforearm amputation, wrist fractures and even a right hand amputation.^{3,4} However, the incidence of Mesenteric tear in a game of TOW was never reported. In this case, it is suspected to be due to the strangulating and shearing force of the rope.

Mesenteric arterial system injuries are rare and account for only 1–5% of the admitted trauma patients.⁵ Isolated mesenteric injuries are more rare.⁶ Breen et al. have classified mesenteric injuries as major and minor. Minor injuries are defined as small hematomas, contusions or lacerations without compromising the bowel circulation.⁷ They are more

frequent, but still pose a challenge to the surgeon. The degree of morbidity and mortality in such case depend on the surgeons' ability to control bleeding and further prevent complications due to bowel ischaemia. Mesenteric tears are more common in the small intestine and can be either longitudinal or transverse, with longitudinal being the more common.⁸ Patients may present in a haemodynamically stable or unstable condition. As in all trauma cases, this dictates the rapidity to intervene. In stable patients, multi-detector CT is found to be valuable in recognising the minor mesenteric injuries.⁹

In our case, the patient was unstable. We found three longitudinal, isolated mesenteric lacerations without bowel ischaemia. On follow-up after one year, it confirmed cautious handling prevents delayed complications such as stenosis. It is suggested that any large intra-peritoneal collection, following trauma, in the absence of organ injury should be seen with suspicion for mesenteric tears and acted upon rapidly. Also be aware, minor mesenteric lacerations can be fatal if delayed. Early suspicion is the key.

Conclusion

Tug of war is a popular sport played world over. Here, a rare and an unreported case of multiple mesenteric tears, due to the rope wound across the waist of the individual playing the role of an Anchor, in the game of 'Tug of war', is highlighted. The endeavour is also to provide a feed back to surgeons about the spectrum of injuries a rope, while anchored to the trunk, can cause. Another interesting deviation from the published literature is the incidence of receiving an unstable patient in isolated minor mesenteric injury (mesenteric lacerations), which is in itself a rare occurrence. Thus, this case report deserves mention in the literature, which would help both in understanding clinical possibilities, helping us prevent morbidity and mortality and also the game organisers to redefine the safety norms of the game.

Conflicts of interest

The author has none to declare.

REFERENCES

1. Tanaka K, Ushizu A, Minamitani N, Fukushima M, Yamamoto H. Biomechanical analysis on dynamic pulling skill for elite indoor tug of war athletes. In: *Proceedings of the 23rd International Symposium on Biomechanics in Sports*. 2005; 330–333.
2. Chotai PN, Abdelgawad AA. Tug-of-war injuries: a case report and review of the literature. *Case Rep Orthop*. 2014;2014:519819.
3. Chuang DC., Lai J-B, Cheng S-L, Jain V, Lin C-H, Chen H-C. Traction avulsion amputation of the major upperlimb: a proposed new classification, guidelines for acute management, and strategies for secondary reconstruction. *Plast Reconstr Surg*. 2001;108(6):1624–1638.

Fig. 2 – Mesenteric tear in midway of small intestine.

4. Lin P-H, Chiu F-Y, Hsiao N-C, Chuang T-Y. Injuries during a massive tug-of-war game. *J Chin Med Assoc.* 2003;66(7):436–439.
5. Watts DD, Fatchry SM. Incidence of hollow viscus injury in blunt trauma. An analysis of 275,557 trauma admissions from the East Multi institutional trial. *J Trauma.* 2003; 54:289.
6. McCullough CJ. Isolated mesenteric injury due to blunt abdominal trauma. *Injury.* 1976;7(4):295–298.
7. Breen DJ, Janzen DL, Zwirewich CV, Nagy AG. Blunt bowel and mesenteric injury: diagnostic performance of CT signs. *J Comput Assist Tomogr.* 1997;21:706–712.
8. Wani I, Bhat RA, Wani S, Khan N, Wani RA, Parray FQ. Isolated small bowel mesentery injury after steering wheel trauma. *Trauma Mon.* 2012;17(Summer (2)):279–281.
9. Atri M, Hanson JM, Grinbatt L, et al. Surgically important bowel and/or mesenteric injury in blunt trauma: accuracy of multidetector CT for evaluation. *Radiology.* 2008;249:524.