WILDERNESS DIARRHEA AT A HIMALYAN BASE CAMP

Lt Col Dr Inam Danish Khan, Professor, Army College of Medical Sciences, India

INTRODUCTION

- Wilderness diarrhea affects backpackers, trekkers, campers, hikers, soldiers, wilderness and outdoor enthusiasts
- Type of travelers diarrhea caused by Cryptosporidium, Giardia which can survive freezing temperatures of mountain streams/ lakes
- Campylobacter, Shigella, ETEC, Hepatitis A and E
- Campsites- Inadequate culinary, washing and hand hygiene
- Incidence of wilderness diarrhea 3-74%, 1 per 5000 person-field days
- 0.26 per 1000 program days under strict hygiene/ sanitation protocols
- In a first of its kind, outbreak of wilderness diarrhea in a Himalayan Base Camp at 4000 m/13,125 ft in Uttarkashi, India

METHODS

- 126 personnel (46 male students, 34 female students, 10 mountain instructors, 16 ancillary staff, and 20 porters)
- Base Camp siting, layout, hygiene practices, duration of occupation
- Oral rehydration and ciprofloxacin-tinidazole for 3-6 days was given
- Primary Outcome- Return of normal bowel function
- Secondary Outcome- Return of routine training at Base Camp

RESULTS

- Base Camp- 24 km from roadhead, 2 km from animal rearing areas
- Total 54 patients, mean age 30yrs, mean Base Camp stay 10 days
- Mean duration of wilderness diarrhea 5.5 days
- 6 patients with mild to moderate dehydration
- Primary and secondary outcome reached in 51/54 patients

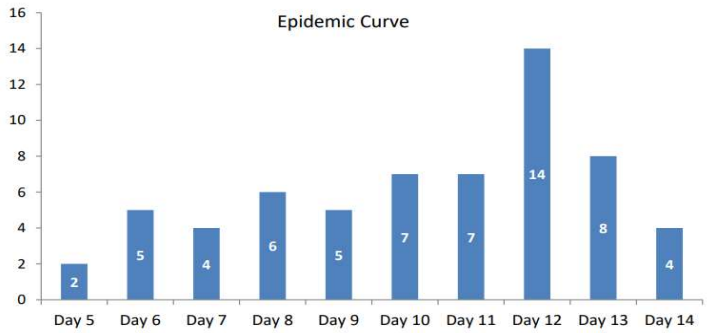

Figure 1. Epidemic Curve of Wilderness/Backcountry Diarrhea (n = 54)

DISCUSSION

- Sources of stagnant water such as lakes may be far, few
- Contaminated by endemic opportunistic diarrheagenic pathogens
- Human, livestock, and wild animal excretions in the watershed
- Washed from higher reaches to lower bodies of water
- Open-air cat-hole defecation in campsites may contaminate
- Outbreak - Transient contamination or pulse contamination
- Hypoxia-induced altered physiology at a high altitude
- High altitude-induced lassitude and indifference
- Untreated water can affect bowel habits
- Confounders in the frequency of bowel evacuation
- Traveler diarrhea prophylaxis not recommended for Indians

CONCLUSION

- Wilderness diarrhea can present in outbreak proportions from formerly safe water sources due to variable microbial contamination
- Traveler risk management strategies, awareness/education
- Capacity building in travel medicine, wilderness medicine, and tropical medicine required

REFERENCES

(1)Johnson C, Winsor S. Oxford handbook of Expedition and Wilderness Medicine. Oxford University Press; 2015:822.
(2)Feng Y, Xiao L. Zoonotic potential and molecular epidemiology of Giardia species and giardiasis. Clin Microbiol Rev. 2011;24(1):110-40
(3)Auerbach PS. Wilderness Med E-Book: Expert Consult Premium Ed- Enhanced Online Features. Elsevier Health Sciences; 2011:2304.
(4)Boulware DR. Influence of hygiene on gastrointestinal illness among wilderness backpackers. J Travel Med. 2004;11(1):27-33.
(5)Zell SC. Epidemiology of wilderness-acquired diarrhea: implications for prevention and treatment. J Wilderness Med. 1992;3(3):241-249
(6)Boulware DR, Forgey WW, Martin WJ 2nd. Medical risks of wilderness hiking. Am J Med. 2003;114(4):288-293.
(7)McIntosh SE. Medical incidents and evacuations on wilderness expeditions. Wilderness Environ Med. 2007;18(4):298-304.
(8)Meyer DJ. An assessment of diarrhea among long-distance backpackers in the Sierra Nevada. Wilderness Environ Med. 2017;28(1):4-9.
(9) Welch TR. Evidence-based medicine in the wilderness: the safety of backcountry water. Wilderness Environ Med. 2004;15(4):235-237
(10)De Bruyn G, Hahn S, Borwick A. Antibiotic treatment for travellers' diarrhoea. Cochrane Database Syst Rev. 2000(3):Cd002242.
(11)Shlim DR. Looking for evidence that personal hygiene precautions prevent traveler's diarrhea. Clin Infect Dis. 2005;41 Suppl 8.