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Department of Forensic Medicine & Toxicology, Third Floor, Library Building, Seth G S Medical College & KEM Hospital, Parel, Mumbai, Maharashtra, India. Pin-400 012. Email id: mlameditor@gmail.com Phone: 022-24107620 Mobile No. +91-9423016325.

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Case Report

White Death: Avalanche Fatality in Nanda Devi Mountain

Pooja Hatwal[a], Chandra Prakash Bhaisora[b], Shinto Devassy[c]

[a]Junior Resident, [b]Professor, [c]Assistant Professor
Dept of Forensic Medicine & Toxicology, Government Medical College, Haldwani, Nainital, Uttarakhand, India. Pin- 263145.

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Abstract

Background: Nanda Devi is the second highest mountain in India and since it is one of the toughest peaks to summit, it attracts only a few climbers. It was an attempt to summit by a group of international climbers with the help of an Indian guide on an unclimbed peak at 6477 meter. During the course of the summit, one of the most dangerous risks they face is the Avalanche, as the climbers will be having all other necessary protection kits like oxygen, light and staple food. While giving permission for such adventure activities, government should have in mind the risk of Avalanche and should also give advices continuously regarding the weather condition and provide provisions for airlifting, to deal with the event of a medical emergency.

Case presentation: We report a case of Avalanche fatality which happened on Nanda Devi Mountain. Owing to the bad weather and adverse climatic condition; bodies of the climbers were recovered only after a period of 28 days by ITBP through Operation Devil.

Conclusion: In all the cases, trauma was the major cause of death. Proper safety measures and medical attention at the right time could have saved most of these precious lives.

1. Introduction

Nanda Devi is the second highest mountain in India with an elevation of 7,816 meter.[1] It is the 2nd highest mountain in India and 23rd highest peak in the world. It is a part of Garhwal Himalayas and is located in chamoli district of Uttarakhand, between Rishiganga valley on west and Goriganga valley on east.[2] Due to its religious significance the peak as well the circle of high mountains surrounding it, was closed to both the locals and climbers in 1983. In 1988, Nanda Devi National Park was declared a UNESCO World Heritage Site. The mountain has two summits, the main summit at 7816 meter and Nanda Devi east at 7434 meter. The western summit is higher and the eastern summit is lower one. Nanda Devi is also notable for its large, steep rise above local terrain.[3]

To climb any peaks in Nanda Devi, permission must be granted from Indian Mountaineering Foundation which is an apex organisation. While climbing any peak mountaineers face may difficulties and problems, avalanche is one of them, which is serious and life threatening problem. Precautions must be taken during mountaineering to prevent such life threatening accidents. Safety measures for prevention of such accidents includes bad weather presumption, follow the instructions given by authorities.

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***Corresponding author:** Dr. Shinto Devassy, Assistant Professor, Dept of Forensic Medicine & Toxicology, Government Medical College, Haldwani, Nainital, Uttarakhand, India. Email: shinto.devassy@gmail.com (M): 0091 9742383741.

2. Case report

Case history

A team of climbers with 12 members including one Indian guide after obtaining permission for climbing Nanda Devi east peak started their journey on 13 may 2019 and after conquering the Nanda Devi east peak, 8 members from group led by Martin Moran (who owns a Scotland based adventure company and having numerous expedition adventures in Himalayas, to his credit) without informing the authorities started their journey to climb an 'unclimbed peak' at height of 6477 meters. They were heard for the last time on 26 may 2019, a day before avalanche hit the Nanda Devi peak.

On 3 June 2019 after search IAF helicopter spotted five bodies but due to inclement weather immediate recovery was not possible. On June 23, 2019 seven bodies were recovered by ITBP team after 20 days search 'operation daredevil'. On 3 July 2019 all the bodies were taken to Haldwani for Medico-legal autopsy and identification. The post mortem was conducted by panel of three doctors on requisition from police and videography was done.

Figure1: Pale area surrounded by hyperaemic areas and black discoloration of bridge of nose.

Autopsy Findings

On external examination, pink coloured hypostasis noted over victims, washerwoman hands and feet with peeling of skin. Ischemic signs over Nose and finger tips noted. On internal examination, multiple traumatic injuries noted.

The cause of death in all mountaineers was polytrauma due to blunt impact force resulting in shock and haemorrhage. However, the bodies were recovered from cold climatic condition (beneath Snow Mountain as per inquest papers) which favours natural preservation of dead bodies. Therefore, exact time of death could not be ascertained. In these cases, the circumstantial evidences may be taken into consideration to finalise time of death. After conducting medico-legal autopsy and identification of dead bodies, dead bodies were handed over to the respective authority.

Figure2: 3rd degree frost bite (involving all layers of skin and causes permanent tissue damage along with wrinkling of skin).

3. Discussion

India has 73 percent of the Himalayan range. It is a huge potential for mountaineering expeditions. Indian Mountaineering Foundation has laid down the guidelines and basic minimum

standards specifically to commercial expeditions. It was a higher risk time due to lots of winter snow and being the beginning of the warming period. In all the cases, blunt trauma was the leading cause of death. Mathieu Pasquier, Olivier Hugli et al in their study concluded that Trauma was the presumed cause of death in 94% in summer avalanche accidents.[4] Alison Sheets, Dale Wang, et al conducted their study on 110 cases of avalanche fatalities and concluded that Asphyxia was the cause of death in 65% of fatalities. Trauma was the cause of death in 29% of the fatalities, out of which the primary cause was multiple system trauma. [5]

An avalanche victim may suffer any degree of trauma. Even due to minor musculoskeletal trauma, victims may cease to struggle and rest entrapped in the debris leading to death from a combination of trauma, asphyxia and hypothermia. Most of the time it is clouded by the non specific and inconclusive post-mortem findings in asphyxia and hypothermia. Elevated avalanche hazard and heightened avalanche activity can be forecasted to some extent. In IMF's criteria the team should carry a radio for having all India radio services. It doesn't specifically cover the weather condition of that particular area and in addition to it at the heights weather changes in a sudden. Slope-cutting techniques are commonly used by Avalanche professionals. In this technique the backcountry users rapidly traverse through the potentially unstable slope from one safe zone to another for testing stability. This technique helps an avalanche in a controlled fashion to eliminate some or all of the avalanche hazard on a slope with providing information on the slope stability. The inexperience of a single person can cause death of the entire team. [6]

Avalanche airbags contains 1 or 2 inflatable balloons as backpacks or vests. It is the avalanche safety devices aimed for preventing burial. A user manually pulls activation handle to deploy the device when caught in an avalanche. [6] It is not there in the IMFs devices to be carried on and should be included in those with avalanche risk. Helmets helps to prevent minor and major trauma in resort skiers and snowboarders. The protective capabilities of helmets designed for recreational skiing and climbing not sufficient to bear impact of the velocities created by medium and large avalanches. But, most of the recreational victims are killed in small to medium sized avalanches of lesser velocities. In such cases, helmets could prevent mild to moderate traumatic brain injuries and helpful to save life. In this case report, Indian guide was the only person who was not wearing helmet and suffered from head injury. Artificial air pocket devices enable a completely buried avalanche victim to divert exhaled CO2 away from airway. Integrating these 2 devices (airbag and artificial air pocket devices) is advantageous as it helps to minimize the separate pieces of equipment and decrease total cost. [6]

Currently, in India, there is no rescue system which is specialized as fire-fighting or emergency medical response in the city for mountaineering. They were not allowed to carry satellite phones due to security issues which all cut them totally out of the world. There were no private helicopters available in the area to reach immediately and airlift the survivors. Helicopters can decrease response time to remote locations, and can be used to search from air with transceiver and RECCO technology. [6] Conditions such as time of day, weather and pilot proficiency in mountain environments can significantly affect the performance of helicopter. Nanda Devi is the second highest mountain in India and since it is one of the toughest peaks to summit, it attracts only a few climbers. During climbing any mountain, climbers face many difficulties like shortage of food, lack of oxygen, avalanches, falling ice, falling rocks, crevasse etc. avalanche is one of the life-threatening problems faced by mountaineers during mountaineering. Avalanche fatalities are common in winters but early season snowfalls are also dangerous and therefore, an avalanche can occur in any month of year.

Avalanche control begins with a risk assessment conducted by surveying for potential avalanche terrain by identifying geographic features, seasonal snow distribution that is indicative of avalanches. Before summiting any peak mountaineers must go through about the peak which is planned to summit, weather forecasting, following instructions provided by authorities. Although prevention should always be the best mitigator of avalanche risk, avalanches can occur even in presumably safe condition. If an avalanche occurs,

rapid rescue and possibly air pocket devices offer extra survival potential for those buried. [7]

Conclusion

Most of the times instead of taking sufficient prevention ends up in blaming game like they were given only permission for Nanda Devi East whereas relatives alleges as they have got open permission and the liaison officer who is with them can decide on accepting any deviation of route. In most of the cases the life could have been saved on timely availability of medical emergency services. The trouble with the Indian rescue apparatus for extreme sports is society has little empathy for these pursuits and often gets labelled as irresponsible and can be seen in every link of the chain from policy interpretation to reporting by media.

Ministry of home affairs has opened up 137 peaks to foreigners desirous of mountaineering in August 2019 and planning to open more mountain peaks. Along with the expanding of such extreme sports government should come forward with solid plans of rescue systems or the availability of medical emergency medical services within short time period on the expense of the climbers who are happy and ready to spend for it.

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