



E120 Scene Inspection in a Harsh High Mountain Environment: The Valle d'Aosta Pilot Program

*Pasquale Beltempo, MD**, Azienda USL Valle d'Aosta, Quart, Valle d'Aosta 11020, ITALY; *Serena Maria Curti, MD**, Azienda USL Valle d'Aosta, Quart 11020, ITALY; *Maurizio Castelli, MD*, Azienda USL Valle d'Aosta-SC Medicina Legale, Quart 11020, ITALY; *Mirella Gherardi, MD, SC Medicina Legale, Aosta 11100, ITALY*

Learning Overview: After attending this presentation, attendees will be informed regarding the challenging task of performing a thorough crime scene inspection in a harsh high mountain environment such as Valle d'Aosta (VDA).

Impact on the Forensic Science Community: This presentation will impact the forensic science community by outlining the VDA's model of cooperation between the VDA Office of Medical Examiner and the rescuers of the emergency department in order to gather proper documentation of the death scene, even in hostile conditions.

VDA is the smallest and least densely populated region of Italy, with a density of just 39 residents per square kilometer. However, the presence of 16 mountains in the region—among them are Mont Blanc, Monte Rosa, and the Matterhorn—whose peaks are higher than 4,000 meters, with nearly 200 glaciers, represents an attraction for tourists in search of high-altitude activities, such as skiing, and rock and ice climbing. Every year, nearly 800,000 tourists arrive in VDA to spend the holidays. Research and rescue interventions of missing people in natural disasters, extreme sports accidents, and motor vehicle/air crashes in such a harsh environment with suddenly changing weather conditions require well-established protocols between Armed Forces alpine rescuers, emergency department first aid teams, and hospital physicians. Forensic activities during these emergencies are not always feasible by the VDA Office of Medical Examiner, due to safety regulations, operative statutory requirements for high altitudes, the limited seating capacity of rescue helicopters, and the survivor's need for prompt response.

Since 2018, the VDA emergency department physicians certified for high-altitude first aid have attended informal training by medical examiners. During classes, the health care professionals were provided with forensic pathology knowledge and operative instructions, including forensic photography skills. A crime scene inspection form was introduced and attendees were taught proper compiling. During the second phase of the program, the first aid team was encouraged to provide feedback to the learning curve by practical experience. The feedback was evaluated and corrections have been discussed for each case with the attendees. Continuous feedback was guaranteed by on-call consultations and recurring meetings.

The results of the training course were tested in the field on January 25, 2019. An aerial collision occurred between an Italian helicopter and a French light aircraft over the Rutor glacier, at an altitude of 2,700 meters, close to the northern Italian border with France and Switzerland. The helicopter was carrying six people: the pilot, an alpine guide, and four passengers who were heli-skiing. There were three passengers on the light aircraft, all pilots who were training in mountain flying. All six passengers of the helicopter were killed in the accident; two of the three passengers of the light aircraft were found alive by rescuers. The remains of the helicopter were spread over a 400-meter area, with bodies recovered from about 50 meters from the wreckage site.

Despite the complexity of the rescue, the trained emergency team was able to accurately geolocate the seven corpses and the survivors, while collecting viable data for accident reconstruction and documenting the scene of the rescue. The bodies underwent external examination, Computed Tomography (CT) scans, and a complete autopsy at Aosta Regional Hospital. The results will be presented and discussed. The confluence of data resulting from scene inspection and from the autopsies allowed the team to reconstruct the accident as a mid-air impact during vertical take off of the helicopter and on-glacier landing of the light aircraft. The pilots of the aircraft were prosecuted for crossing into Italian territory without communicating a flight plan to Italian air traffic control. The preliminary results of the program have been discussed with authorities and a regional training program for emergency physicians is set to start in the fall of 2019. The goal of the program is also to prepare a regional protocol for scene inspection in harsh high mountain environments that could be applied in regional systems with comparable geographical characteristics.

High Mountain, Harsh Environment, Scene Inspection