

Terrorism in Croatia

Nikola Bradic, MD;¹ Drazen Cuculic, MD, PhD;² Ervin Jancic, MD³

1. Department of Anesthesiology, Reanimatology and Intensive Care Medicine, University Hospital Dubrava, Zagreb, Croatia
2. Department of Forensic Medicine, School of Medicine Rijeka, University of Rijeka, Croatia
3. Department of Neurology, General Hospital Karlovac, Croatia

Correspondence:

Nikola Bradic
2, Zagorska 2 C
10000 Zagreb
Croatia
E-mail: nikola.bradic@ri.tel.hr

Keywords: bomb attack; blast injuries; Croatia; explosive wounds; terrorism

Abbreviations:

EMS = Emergency Medical Services

Web Publication : 06 February 2004

Abstract

Introduction: This report illustrates Croatia's experience with the terrorist attack in the city of Rijeka in October 1995. Also, the intention of this report is to outline how emergency services were functioning in this sudden-onset situation.

Methods: The medical documentation of 27 wounded citizens in the attack was analyzed and the appearance of bodily wounds, severity of wounds, and the mechanisms of injury are described. From the forensic medical report, the wounds and damages sustained by the terrorist also were analyzed. All findings were compared with similar cases from around the world.

Results: In the 27 wounded citizens, three (11%) had head injuries, and injuries of the abdomen in only two cases (7%) were found. The most common injuries sustained involved one or more extremities: 16 (59%) persons had wounds of an upper or lower extremity or a combination of multiple wounds. The main cause of death of the terrorist was explosive wounds to the chest and abdomen with destruction of multiple inner organs (primarily kidneys, liver, abdomen, and lung). Furthermore, the terrorist had a fracture of the skull base and multiple injuries to the brain.

Conclusion: Comparing the findings with other data from the literature, the distribution in the percentages of wounded is almost the same as reported in many bomb attacks. In this case, the walls of the building protected many citizens, which is why so few were seriously injured. Forensic examination of the terrorist's body showed all of the characteristics of blast injuries.

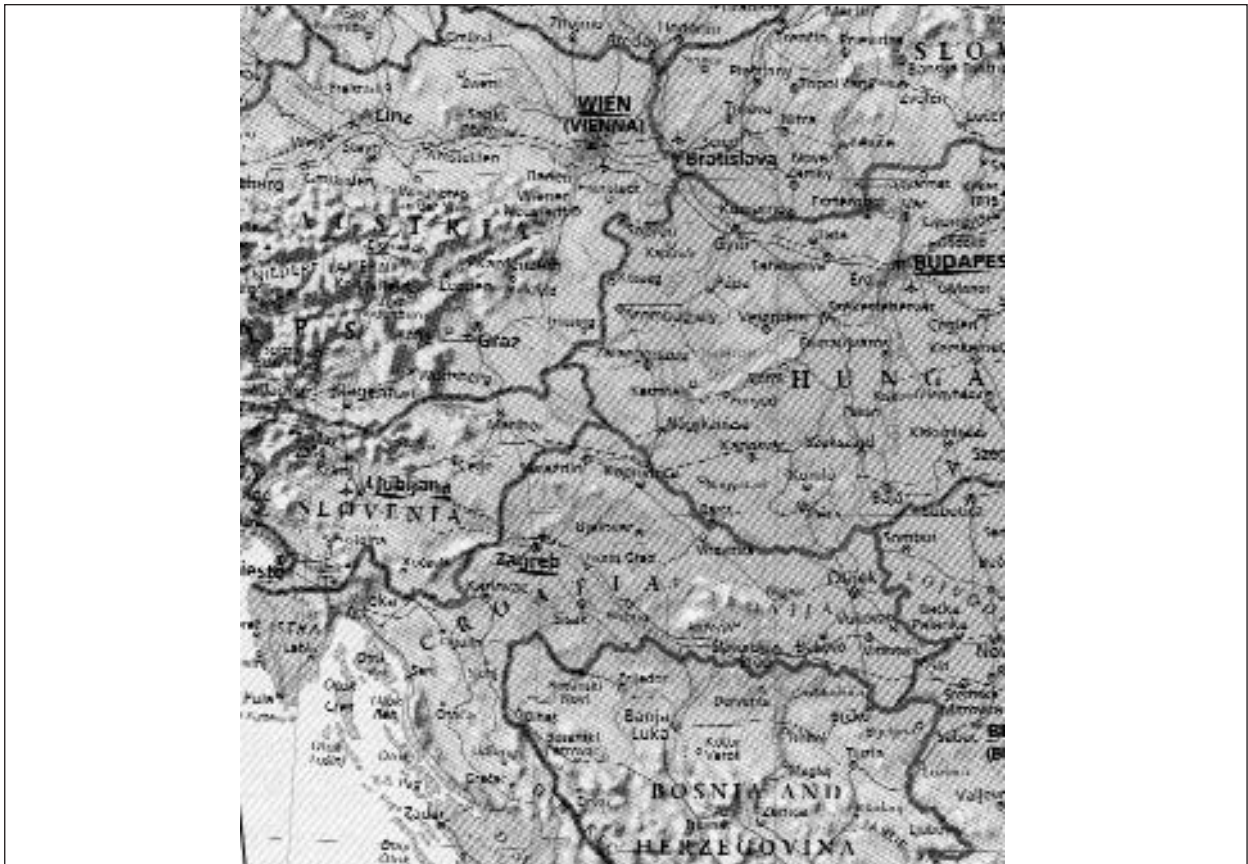
Bradic N, Cuculic D, Jancic E: Terrorism in Croatia. *Prehosp Disast Med* 2003;18(2):88-91.

Introduction

Croatia is a country that became independent in 1991 when it separated from the conglomerate country called Yugoslavia. Until the summer of 1995, Croatia was attacked by the remainder of the Yugoslavian's army, and spent these years at war. After the summer of 1995, and after the successful liberation of the occupied parts of the state, Croatia has been developing into a modern country, primarily oriented towards tourism.

Croatia is situated on the west of the Balkan peninsula, in the middle-

Europe (Figure 1). On the southwest side, Croatia has a long seacoast (6,000 km) on the Adriatic Sea and its territory includes >1,000 islands. In the middle part of the country, there are many mountains, and in the north, a large valley borders Hungary, Austria, and Slovenia. Croatia is separated from Italy by the Adriatic Sea. Approximately 4.5 million citizens live in Croatia. In the last few years, Croatian politics and development have been directed toward entry into the European community.



Prehospital and Disaster Medicine © 2003 Bradic

Figure 1—Map of Croatia and the surrounding countries (printed with permission)



Prehospital and Disaster Medicine © 2003 Bradic

Figure 2—Parts of the terrorist car and police building after the explosion

Terrorist Attack in Rijeka, October 1995

On Friday, 20 October 1995 at 11:20 hours, a car exploded behind the Police Headquarters building in downtown Rijeka. In the lobby of the Police Headquarters, there were offices for the delivery of car licenses, passports, and identification cards. Every day, many citizens enter the building. There are many institutional buildings around the building of Police Headquarters, and, at the time of the explosion, the

buildings were very crowded. First, there is a cathedral, which was full of believers and older people. Less than 20 meters further, there is one of the largest elementary schools in Rijeka, in which there were >300 pupils at the time of the explosion. The University of Rijeka and the School of Philosophy and Literature also are in the immediate area, and the students were attending lectures. Also, a bank, which is across the street from the Police building, was crowded with people.

The explosion was very strong, and it destroyed the whole parking yard in front of the Police Headquarters (Figure 2). After the explosion, a fire started and burned the first floor of the Police building. The elementary school and the School of Philosophy were damaged, including all of the windows and first floors. Of the surrounding buildings, the bank and the cathedral remained unharmed.

During the first moments after the explosion, most of the citizens didn't know what had happened. However, the emergency services acted quickly since the police had alarmed the firefighters and Emergency Medical Services (EMS). The whole area was blocked immediately, thus avoiding a potential panic reaction from citizens who remained inside the buildings. Firefighters arrived within eight minutes, and started to quench the fire and evacuate the citizens from the police building. As the police building had three main entrances, many of the citizens were

Number Wounded	Head	Chest	Abdomen	Extremities	Poisoned
27	3 (11%)	3 (11%)	2 (7%)	16 (59%)	3 (11%)

Prehospital and Disaster Medicine © 2003 Bradic

Table 1—Distribution of wounds and incidence of smoke inhalation of the wounded citizens

evacuated safely through doors on the other side of the parking yard. There were 27 wounded citizens, 11 of them sustained minor injuries. All of these minimally wounded victims had sustained wounds from metal car pieces and parts of doors. The most severely injured sustained wounds to the chest and abdomen (5 citizens), and three of them had wounds to the trunk, arms, and legs. Three citizens were developed symptoms related to the exposure to smoke from the fire and had light respiratory dysfunction, eye-tearing, and hard coughing. Sixteen citizens with minimal wounds had primary damage to their arms and legs from pieces of glass and wood from windows. One police officer sustained an eye wound from a broken piece of glass. The first EMS crew that arrived on the scene, alarmed other crews on the shift, and then they provided triage of the patients. All of the wounded citizens were transported to the hospital for observation and treatment. Eleven patients were hospitalized, three of them underwent surgery, and all survived. Only one person died and that person was the terrorist, who had driven the car. Data obtained from the newspaper several days later indicated that the plan was to leave the car containing plastic C-4 explosive in front of the police building and, only after he had moved a safe distance from the car, was he to activate the bomb by the remote control. But, unfortunately for him, the police officer on guard tried to stop him, and he crashed his car into the wall and activated the bomb while he was still in the car. The explosion threw the terrorist from the car causing serious and deadly wounds.

The main cause of death to the terrorist was explosive wounds of the chest and abdomen with destruction of multiple internal organs (primarily kidneys, liver, abdominal part of the aorta, rupture of the left lung). Furthermore, the terrorist had a fracture of the base of the skull and multiple injuries to the brain.¹ Pupils from the elementary school and students from the School of Philosophy were evacuated immediately to a safe place. None were wounded, and the damage was confined to the buildings. The same was true for the citizens who were leaving or were within the cathedral at the time of explosion.

Discussion

This case was Croatia's single experience with global terrorism so far. The medical aspects of this attack were classical. From the literature, it has been known that the approximate number of wounded in attacks like this one typically are between 30 and 40, but this number is variable. In this case, 27 persons were wounded. The leading causes of injury in explosive attacks are from the explosive blast. The primary blast produces closed wounds of the chest, lungs, and ears (organs which are very sensitive to sudden changes of air pressure). The secondary blast produces wounds of the

arms, legs, head, and internal organs and is similar to poly-trauma. The tertiary blast affects the entire body area, and is the result of catapulting the body through the air.²⁻⁶ Here, we saw the tertiary blast; injuries were presented only in the terrorist who was in the car with the bomb. In all other wounded citizens, a relatively small number of them had primary or secondary blast injuries they were inside of the building and because were protected by the walls. Many of the minimally wounded citizens were wounded by the pieces of glass, wood, and of pieces from the damaged car, which flew inside the building through windows and doors.

From the data in Table 1, we excluded the wounds and damages to the terrorist, because he had all of the characteristics of tertiary blast injuries with multiple damages to organs and organ systems.

The distribution of wounds to citizens is almost the same as those published by other authors who described wounds of bomb explosion in terrorist attacks.⁷⁻¹¹ Comparison between the injuries of our victims and the victims in the terrorist attack in New York on 11 September 2001 was not possible because of the specific situation of the attack in New York (a combination of bomb explosion plus demolition of skyscrapers). Reports from the scene of the bomb attack in Oklahoma in 1995 were more tragic than this case, but are similar in description of wounds.⁹⁻¹¹

Regarding the organization, an urban catastrophe is a limited type of event and include three criteria: (1) the number of wounded is >20; (2) involve >10 ambulances and/or two services with mobile crews; and (3) involve >1 hospital in the rescue. All these criteria were fulfilled in this case, so the Rijeka bomb attack was considered an urban catastrophe.

In our opinion, we do not have the targets that are typically of interest to the world's terrorist organizations. In this case, we wanted to describe one situation in which all emergency services worked quickly and well. The problem in situations like this is coordination between EMS, police, and firefighters. Another problem is that each EMS shift had an inadequate number of physicians and crew. Sometimes, this small number is not sufficient for the regular work, and is completely insufficient for situations of mass casualties. A similar problem has been seen during car accidents on the highways with a large number of wounded. Each EMS unit is able to call for additional crews. Most often the EMS alarms employees at their home, but, in many cases, too much time is lost. On the other hand, closely-situated EMS units can send their crews to the scene, but they also lose much time. Furthermore, some EMS units have good cooperation with a voluntary organization called the Mountain Rescue Service, which is composed of alpinists who have passed additional courses of

basic life support. In many cases, these persons play a big role in saving lives. In this case, Rijeka's EMS performed emergency care on its own, and did so very quickly.

At this moment, we are developing a plan at the state level for responding to mass-casualty situations. Until now, all actions have been coordinated from the services that were involved in the situation, and all actions were coordinated by

the dispatch center. Shortly, we expect a new improved plan for working in mass accidents, which will coordinate all of the relevant services in the country from one center. It will involve EMS, hospitals, firefighters, and the police as the first line, and after that, other organizations, including the army. With this plan, situations like this will be better managed, but nevertheless, we hope that we won't have the need to use it.

References

1. Official report of Department of Forensic Medicine, School of Medicine Rijeka, University Rijeka, Croatia.
2. Brismar B, Lennart B, Cooper GJ, *et al*: The terrorist bomb explosion in Bologna. *J Trauma* 1982;22:216–220.
3. Caro D, Irving M: The Old Bailey bomb explosion. *Lancet* 1973;1:1433–1435.
4. Hadden AW: The injuries of terrorist bombing. *Br J Surg* 1978;65:525–551.
5. Clemendson CJ: Blast injury. *Physiol Rev* 1956;36:334–336.
6. Elsayed NM, Gorbunov NV: Interplay between high energy impulse noise (blast) and antioxidants in the lung. *Toxicology* 2003;189(1-2):63–74.
7. Rutherford WH: Experience in the accidental and emergency deployment of the Royal Victoria Hospital with patients from civil disturbances in Belfast 1969–1972, with a review of disasters in the united Kingdom 1951–1971. *Injury* 1973;4(1):189–199.
8. Waterworth TA, Carr MJT, Irving M, *et al*: Report of injuries by patients at the BGH following the recent bomb explosions. *Br Med J* 1975;2:25–27.
9. Special report. The Oklahoma City bombing: mass casualties and the local hospital response. *Hosp Secur Saf Manage* 1995;16(5):5–10.
10. Robinson M, Kernes R, Lindsay W, Webster M: After the bomb. Oklahoma City rescuers talk about their experiences. *J Emerg Med Serv* 1995;20(6):40–41,84–88.
11. Mallonee S, Shariat S, Stennies G, Waxweiler R, Hogan D, Jordan F: Physical injuries and fatalities resulting from the Oklahoma City bombing. *JAMA* 1996;276(5):382–387.
12. Local newspaper, *Novi List* No. 286–291, October 1995.