

31 MAY 1995

146. The Sarin Disaster in Tokyo—A Preliminary Kamedo Observer Report

P Kulling,¹ H Henmi,² M Minami,³ N Takasu⁴

¹KAMEDO, Department of Emergency and Disaster Planning, National Board of Health and Welfare and Swedish Poisons Information Centre, Stockholm, Sweden

²Department of Emergency and Critical Care Medicine, Nippon Medical School, Tokyo, Japan

³Department of Hygiene and Public Health, Nippon Medical School, Tokyo, Japan

⁴Department of Emergency Medicine, St. Luke's International Hospital, Tokyo, Japan

During the morning of 20 March 1995, there was a release of a toxic gas in the subway in central Tokyo. Three subway lines were affected, and there were poisoned victims at 15 stations.

Early symptoms included eye irritation, malaise, breathing difficulties, and muscular weakness followed by unconsciousness, bradycardia, and in very severe cases cardiorespiratory arrest. Pronounced miosis (pinpoint pupils) was present in all victims who had significant exposure.

The clinical picture indicated organophosphate poisoning which quite soon was verified by analysis of the toxic agent which proved to be the nerve gas Sarin. Blood analyses in many victims showed very low cholinesterase activity. The Sarin metabolites isopropanol and acetone also were detected in many patients

Treatment with atropine and in many cases also pralidoxime proved to be effective. In severe cases, atropine was administered in doses of up to 10 mg per hour for 24 hours when given without the oxime, and 2 mg per hour when given combined with pralidoxime. In less severe cases, much lower doses of atropine (and pralidoxime) were administered. In mild cases only a single atropine dose was necessary.

In all, approximately 5,000–6,000 persons were exposed to the toxic gas. Ten victims died (nine at the accident site and one after arrival at the hospital). In total, 550 victims were transported by ambulance to hospitals in Tokyo, but many victims were transported by bus, private cars, or came on foot. For example, at St. Luke's International Hospital, 730 patients were evaluated, but only 64 were transported to the facility by ambulance, 40–50 patients arrived by bus arranged by the fire brigade, and the rest by private cars or on foot. A total of 110 patients were admitted, six of these to the ICU. The rest of the patients were discharged after examination. Most admitted patients were able to leave the hospital within two days of the event, except for the severe cases. Some patients who presented severe symptoms seem to have recovered completely, but a few cases suffer from hypoxic brain damage.

150. Emergency Report: A Case Study of 640 Victims of the Tokyo Subway Sarin Attack

Tetsu Okumura, MD,¹ Nobukatu Takasu, MD,¹

Shou Miyanoki, MD,¹ Akihiro Mituhashi, MD,¹

Shinichi Ishimetsu, MD,¹ Shigeaki Hinohara, MD,²

Per Kulling, MD³

¹Emergency Department, St. Luke's International Hospital Tokyo, Japan

²Director of St. Luke's International Hospital Tokyo, Japan

³Department of Emergency and Disaster Planning, National Board of Health and Welfare and Swedish Poisons Information Center, Stockholm, Sweden

On the morning of 20 March 1995, the Tokyo Subway System was filled with a noxious substance later identified as a diluted form of a nerve gas called Sarin. Five subway cars were affected during the morning rush hour. Twelve victims were killed and thousands more sickened.

St. Luke's International Hospital is located near the affected subway station, Tsukiji Station. Therefore, the hospital received the greatest number of patients within the Tokyo area, a total of 640 patients; 111 patients were admitted to this hospital. Three patients were in cardiopulmonary arrest upon arrival; one was nonresponsive to resuscitation efforts, and two were resuscitated successfully. Of the two resuscitated patients, one had undergone severe hypoxic brain damage and died on hospital day 23, the other fully recovered.

Respiratory arrest secondary to nerve gas exposure is the most critical complication. Most of the patients complained of headache, dyspnea, nausea, eye-pain, blurred vision, dark vision, etc. Upon physical examination, miosis was the most prominent finding. Treatment consisted of administration of atropine and pralidoxime within three hours of initial chemical exposure. Within 2–4 days 95% of patients recovered and were subsequently discharged.

098. Industrial Accidents: Some Consideration on Existing Regulations

L. Altias, G.A. Zapponi

Istituto Superiore di Sanita, Rome, Italia

This study focused on some main characteristics of catastrophic accidents involving hazardous chemicals. For instance, some statistics concerning major accidents involving the spill of chlorine and ammonia that took place in the period of 1919–1978 (Health and Safety Commission 1979) indicate that releases from 2–90 tons. and from 19–600 tons. for these two chemicals occurred. However, in the events reported as causing the higher number of deaths, release of the chemicals ranged from 20–30 and 19–90 tons, and for both of these chemicals, the highest amounts released did not cause deaths.