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Fire disasters in Osaka

TAKASHI UKAI¹, MUNEO OHTA¹, CHOEI WAKASUGI² and SHIGERU HISHIDA³
¹Osaka Prefectural Senri Critical Care Medical Center, Japan
²Department of Forensic Medicine, Osaka University Medical School, Japan
³Department of Forensic Medicine, Hyogo Medical College, Japan

Fire disasters in urban areas are theoretically preventable and avoidable, most of them being man-made. Unfortunately, accidents of the same sort occur repeatedly, without any advantage being taken of the lessons learned before. Even though no two disasters are exactly alike, they often show common features and give much useful information for future preparedness and prevention of similar disasters.

In fires in buildings, many new synthetic polymers used for furniture, upholstery, carpets, bedding and curtains yield combustion products such as carbon monoxide, cyanide, phosgene, hydrogen chloride and nitrogen oxides. These noxious gases may be additively toxic and very quickly make the victims incapable of escaping from the site.

In this paper, four major fire disasters which took place in Osaka and its outskirts in the past twenty years are reviewed (Table 1) and their common and specific features are analysed. Here, the term 'major disaster' refers to a disaster involving ten or more deaths.

Important aspects of the prevention of fire disasters, and problems of rescue and treatment of the victims are also discussed.

Table 1. Major fire disasters in Osaka

<table>
<thead>
<tr>
<th>Type of disaster</th>
<th>Time of outbreak</th>
<th>Deaths</th>
<th>Injured</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gas explosion at subway construction site</td>
<td>08/04/1970, 17:27</td>
<td>79</td>
<td>428</td>
</tr>
<tr>
<td>Sennichi Building fire</td>
<td>13/05/1972, 22:27</td>
<td>118</td>
<td>68</td>
</tr>
<tr>
<td>Passenger boat fire</td>
<td>18/05/1988, 01:20</td>
<td>11</td>
<td>35</td>
</tr>
<tr>
<td>Supermarket fire</td>
<td>18/03/1990, 12:30</td>
<td>15</td>
<td>6</td>
</tr>
</tbody>
</table>
THE FOUR DISASTERS

(1) A gas explosion occurred at a construction site on a subway in the middle of Osaka City at 17:27 on 8 April 1970. A construction worker with his power shovel broke a large gas pipe, and the leaking but stagnant gas in the underground cave was ignited by a spark from a car engine and exploded. The explosion was so big that many heavy concrete blocks covering the excavation in the construction site were blown into the air, hitting a number of pedestrians. People and cars were blasted and the neighbouring houses caught fire (Figure 1). This accident killed 79 people and injured 428. Major causes of death were head trauma, chest and abdominal trauma, burns, multiple trauma and suffocation.

As the disaster occurred in the middle of the city, all the victims were evacuated from the site within 30 minutes, some by themselves, some with the help of bystanders or policemen and some by professional workers.

Six hundred and fifty-seven personnel and many fire engines with 22 ambulances were mobilized by the Osaka City Fire Department. However, owing to the lack of communication between fire department, police department and hospitals, triage was not smoothly performed and the neighbouring hospitals were chaotic with crowds of patients. What was learned from this disaster was the importance of good communication among the authorities concerned and the necessity for the rescue personnel, policemen and physicians to have knowledge of triage.