CATASTROPHE IN ASUNCIÓN, PARAGUAY

Balmelli B., Aquino O., Insaurralde M., Romero F.

Department of Plastic Surgery, Reconstruction, and Burns, Central Hospital of the Institute of Social Welfare, Asunción, Paraguay

SUMMARY. On Sunday 1 August 2004, at noon, in a well-known supermarket (Ycua Bolaños) on the outskirts of Asunción, the capital of Paraguay, there was a violent explosion in the fast-food section. This was caused by a build-up of gases in the chimneys of the kitchen. The flames spread rapidly through the air ducts, causing a huge fire throughout the supermarket. When the fire broke out, there were about 1000 people present. According to official records, 424 people died in the disaster and 30 were reported missing. Various medical institutions admitted a total number of 360 patients with third-degree burns and/or damage to the airways. One hundred and eighteen patients were treated in the Reconstructive Plastic Surgery and Burns Department of the Institute of Social Welfare Hospital, the centre of reference for the capital of Paraguay.

Methods and material

The closed area of the supermarket contained an enormous amount of combustible material, causing the escape of toxic gases and carbon monoxide, with severe respiratory injuries to most of the people who escaped. A smaller number suffered third-degree burns.

This survey reports aetiological data regarding the sex of the patients, the body area burned, burn extent, gravity of lesions, fatalities, and the duration of hospitalization of the 118 patients treated with plastic surgery in the Institute of Social Welfare Hospital.

Results

Sex

Of the 118 patients treated, 53 (45%) were male and 65 (55%) female (*Fig. 1*).

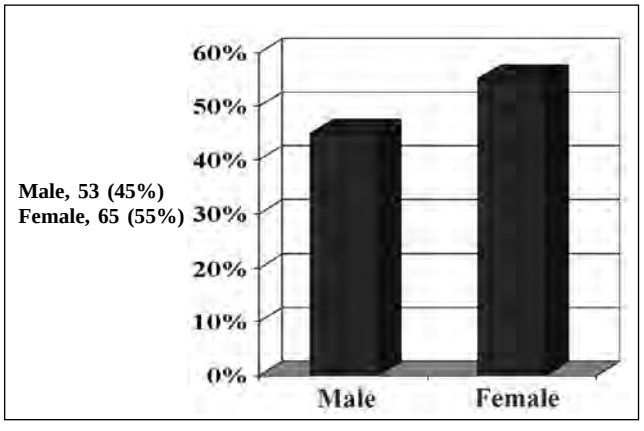

Fig. 1 - Distribution of patients by sex.

Age

Thirty-seven patients (31.4%) were under 20 years of age, 68 (57.6%) were between 21 and 50 years old, and 13 (11%) were over 50 years old. The majority were between 21 and 30 years old (*Fig. 2*).

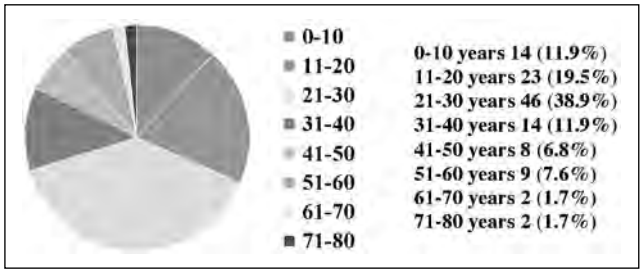

Fig. 2 - Distribution of patients by age.

Total body surface area burned

The total body surface area burned was less than 10% in 22 cases (55%), between 11 and 20% in eight patients (17.5%), and more than 20% in 11 patients (27.5%) (*Fig. 3*).

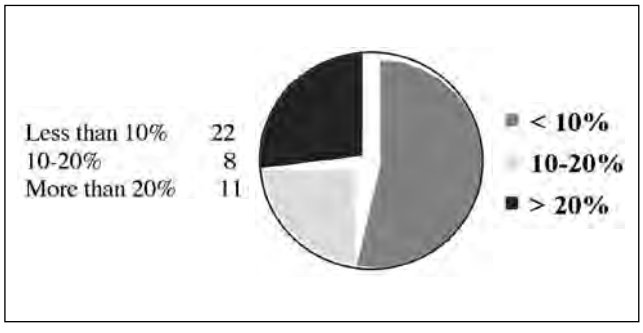

Fig. 3 - Total body surface area burned.

Burn depth

With regard to burn depth, 33 patients (80.4%) had full-depth burns and eight (19.6%) had partial-depth burns (*Table I*).

Table I - Burn depth

Depth	Number of cases	Percentage
Superficial second degree	8	19.6
Deep second degree	15	36.5
Third degree	18	43.9

Hospitalization

Seventy-seven patients (65%) were hospitalized with respiratory injuries alone and 41 patients (35%) with respiratory injuries associated with skin burns (*Fig. 4*).

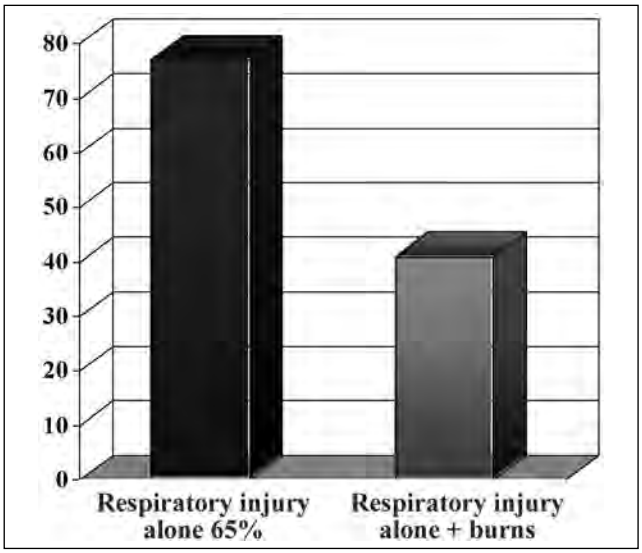

Fig. 4 - Hospitalization.

Burn area

The body areas most frequently area affected were the upper limbs, followed by the lower limbs, the head, face, abdomen, and thorax.

Duration of hospitalization

Most of the patients were discharged within the first week (*Table II*).

Survival

The main complications in surviving hospitalized patients were lung damage, infections, hydroelectrolytic complications, and psychological damage (*Table III*).

Table II - Duration of hospitalization

One week	82 patients, high medication
Two weeks	21 patients, high medication
Three week	0 patients
Four weeks	5 patients, high medication
Five weeks	7 patients remained in hospital, the last on high medication was discharged before the second month

Table III - Complications

Infectious	- 19
Cardiovascular	- 2
Pulmonary	- 41
Renal	- 2
Psychiatric	- 20
Cutaneous	- 8
Amputations	- 5
Neurological	- 3
Hydroelectrolytic	- 10
Shock	- 10

Fatality

Six of the patients admitted (5%) died (*Table IV*), including all the patients with serious renal insufficiency. Deaths between the sexes were equally divided. The females were all between 20 and 50 years old.

Table IV - Mortality - two cases out of six patients (5%)

Respiratory insufficiency - one patient
Infectious shock - two patients
Renal insufficiency - two patients
Pulmonary thromboembolism - one patient

Fig. 5 - Patients burned in the fire.

Fig. 6 - Other patients.

Fig. 7 - Three more patients.

Fig. 8 - Plastic Surgery, Reconstruction, and Burns Service (Instituto de Previsión Social).

Discussion and conclusion

In developing countries like Paraguay, burns present a very real social problem, not only because of the services that are necessary but also because of their after-effects.

A tragedy of the magnitude that we describe in this paper, the greatest in South America and the second greatest in the world in the last 30 years, represented a real national catastrophe for public health in Paraguay.

Most of the people involved in the fire were burned to cinders or died of carbon dioxide poisoning or of other poisonous gases. Almost 33% of the patients who were hospitalized were admitted to our hospital.

There was no major imbalance as regards public hospitals with respect to the complexity of the injuries, because the predominant cause was inhalation injury alone.

Our statistics show that all the patients suffering from third-degree burns also had respiratory injuries, which aggravated their condition and extended their hospital stay, even if external burns did not represent an important percentage, except in 11 specific cases, with more than 20%. Among the patients hospitalized, the majority were female (13 females to 11 males), probably because most of the shoppers in the supermarket at the time were women. The age group most affected was that between 21 and 30 years of age, i.e. 38.9%, a significantly high percentage.

The body areas most affected by burns were the upper limbs, followed by the lower limbs and the face.

The hospitalized patients mainly presented lung complications and psychological problems - nearly all of them had infections, hydroelectric problems, or one or more family members who died in the fire.

The fatality rate was 5% (50% male), due to infections and renal causes. The two patients suffering from renal problems both died. The majority of the patients were discharged within the first week.

The experience of a tragedy of this magnitude stimulated us to focus on preventive measures for the extinguishing of fires in public places, to plan national emergency drills in order to arouse general awareness regarding the development of long- and short-term catastrophes, which until this fire did not exist in Paraguay, and to create a large number of burn patient centres, of which only two exist in our country. These were overexposed in their capacity for treatment, as the majority of patients were not suffering from respiratory problems.

RÉSUMÉ. Dimanche le premier août 2004, à midi, dans un renommé supermarché (Ycua Bolaños) à la périphérie d'Asunción, la capitale de Paraguay, il y a eu une violente explosion dans le rayon du prêt-à-manger causée par une accumulation de gaze dans les cheminées de la cuisine. Le feu s'est rapidement propagé à travers les conduits d'aération et a causé un incendie de proportions immenses dans tout le supermarché. Au moment de l'explosion il y avait environ mille personnes présentes. Selon les données officielles, 424 personnes sont mortes dans le désastre et 30 ont été portées disparues. Les institutions médicales ont admis 360 patients atteints de brûlures de troisième degré et/ou dommages aux voies aériennes. Cent dix-huit patients ont été traités dans le Département de Chirurgie Reconstructrice Plastique et de Brûlures de l'Institut de l'Assistance Sociale, le centre de compétence de la capitale paraguayenne.

BIBLIOGRAPHY

1. Fontana C., Domingos M.M., Ferreira M.C.: Epidemiology of Burns. Rev. da Soc. Bras. Cir. Plast. Est. Reconst., 9: sine pagina, 1994.
2. Tejerían C., Reig A., Codina J. et al.: Burns in patients over 60 years old: Epidemiology and mortality. Burns, 18: 149-52, 1992.
3. Thompson P.B., Herndon D.N., Traber D.L. et al.: Effect on mortality of inhalation injury. J. Trauma, 26: 163-5, 1986.
4. Tompkins R.G., Burke J.F., Shoenfeld D.A. et al.: Prompt eschar excision: A treatment system contributing to reduced burn mortality. Ann. Surg., 204: 272-81, 1986.
5. Smith D.L., Cairns B.A., Ramadan F., Dalstom J.S. et al.: Impact of inhalation injury, burn size and age of mortality: A study of 1447 consecutive burns patients. J. Trauma, 37: 655-9, 1998.
6. Clark W.R., jr: Smoke inhalation, diagnosis and treatment. World J. Surg., 16: 24-9, 1992.
7. Zaidi M., Franka M.R., Abusetta A. et al.: Management of smoke inhalation - a study of 244 severely burned patients admitted to the Burn Intensive Care Unit at the Burn and Plastic Surgery Center, Tripoli, Libya, in the period 1.1.93-31.12.96. Annals of Burns and Fire Disasters, 11: 91-9, 1998.
8. Diario ABC Color, Asunción, Paraguay, August-October 2004.

This paper was received on 24 October 2006.

Address correspondence to: Dr B. Balmelli, Department of Plastic Surgery, Reconstruction, and Burns, Hospital Central del Instituto de Previsión, Av. Sacramento c/Lombardo, Bo. Sto. Domingo, Asunción, Paraguay.

Mediterranean Council for Burns and Fire Disasters (MBC)

WHO COLLABORATING CENTRE

On the INTERNET
http://www.medbc.com

for:

Notice board
WHO Section – Humanitarian Section – Annals – Medit-line – Search engine – Links to related sites