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Burns due to acid assaults in Bogotá, Colombia

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ABSTRACT

Acid burns are not very frequent, occupying between 3% and maximum 14% of all etiologies. They mostly occur at home or at work, however there has been an increase in publications outlining chemical burns where aggression is the cause of this burn. There is a different epidemiological profile between developed countries and developing ones. It seems an ongoing upsurge is occurring in the number of registered attacks within developing countries in recent years. A cross sectional retrospective review of attacks by acid was done in Bogota, Colombia from 1995 to the first trimester 2012. A cumulative number of 35 burn patients were registered during the study period. It is found that the main target, almost the unique target, of this attack are young women belonging to low socioeconomic status with low education degree and high dependence on her partner. The patient's age mean was 22.7 years, ranging from 13 to 41 years. The physical and psychological scars were very severe.

1. Introduction

The general epidemiology of chemical burns is similar all over the world. This type of burn usually occurs at home or in a work environment. However there has been an increase in publications outlining chemical burns by assault resulting in disfigurement, sometimes blindness or vision impairment, and constituting a major economic burden. The increase in publications on this subject may be due to either an increased incidence of these attacks or interest on the part of physicians and researchers in knowing their causes and characteristics, especially in developing countries [1–3]. The increase in assault thermal injuries varies widely with reported rates, ranging from 1.8% to a high of 20.9% [4].

There are epidemiologic differences between developed and developing countries. In 2007, a review was published of 24 publications related with chemical assault in the world. This article puts in evidence the existence of different epidemiological characteristics between developed and developing countries [5]. In the United States of America, for example, chemical burn assaults are more related to minorities, to pre-existing alcohol and/or drug abuse, and burglaries; 67% of the reported victims are males and the main age is 44 years; alcohol abuse has shown to be an important predisposing factor in 50% of the New York assaults; Dorn reported acid assaults in Georgia, where 67% of the attackers were male and 84% black [6]. In Seattle it is related to homeless conditions [7]. The UK has the highest reported male to female ratio 6.14:1.

There seems to be an ongoing upsurge in the number of registered attacks with in recent years in developing countries. In some countries like Bangladesh, one of the most densely populated and world's poorest, burns in women are the consequence of a social punishment or revenge. The act of chemical assault has been labeled as a ''gender crime'' and with a significant prevalence of female victims (0.37:1) male to female in this particular country. Bangladesh had the lowest male to female ratio (0.37:1; 0.15:1) and the youngest population in two studies: 22.5 and 20.4 years [8].

In other developing countries, psychosocial problems in the communities there are some of the main root causes that trigger an acid assault. For example, in Taiwan, financial and domestic disputes were the dominant trigger in 80% of the

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assault cases [9]; in Jamaica the assailants are commonly women mainly attacking women on account of infidelity [10]; in Sri Lanka the age range was 12–60 years, with a male to female ratio of 2.8:1; the assailant was recognized by the victim in 39% of the assault cases, which knew him from before; failed love affairs; adultery; marital disharmony; family disputes; and issues related to land, money, and business ventures were among some of the finding solutions to psychosocial problems in the community [3].

In Uganda, robbery and burglary accounted for 47% of the registered acid assault cases [1].

Ethnic minorities have already been identified as high risk groups. In 1988, Stone reported 50 patients treated in Cape Town, South Africa.

There is a common connector between the acid assault victims and it is the fact that they are usually unemployed, an element that perhaps makes them more vulnerable. Victims of 25 years or less constituted the predominant subgroup. 3.3% 41 patients were related to an assault-gender distribution 2.2:1 male–female. Battery victims were less likely to be married [11].

Additionally, in the previously cited countries, religion, as well as domestic violence and aggression toward women are the main causes of chemical burn assaults.

Latin American publications were not found. We only found some information through different media and newspapers. For example, there is a mention to an acid assault against the wife of Uruguay's soccer team technical director. In the Dominican Republic it's well known the so called ''devil's acid'' was used against people for different reasons.

2. Materials and methods

A cross sectional retrospective review of the burn registry from the Hospital Simon Bolivar Burn Center, the largest hospital in Colombia specialized in burn care and rehabilitation, from the Burn Foundation and from a personal interview with nine of the patients affected by chemical assault from 1995 and first trimester of 2012. Informed patient consent was obtained for the publication of their pictures.

The evaluated variables included were: age, gender, TBSA burnt, body areas affected, type of acid used, civil and socioeconomic status, educational level, known or unknown assailant, relationship with the attacker, known reason for aggression, days of inpatient care. The data collection was done by the researcher and a social worker from the Burn Foundation.

3. Results

A cumulative number of 35 burn patients were registered during the study period (Table 1). From this total, 28 had

Table 1 – First acid victim's data.

#	Name	Age	City	Agent	Assailant	H	Affected area	SCQ	Motive
1	VN	21	Bogotá	Sulphuric acid	Known	11	Face&neck	15	Retaliation
2	VA	13	Bogotá	Chemical	Unknown	6	Legs	8	
3	ML	20	Chía	Chemicals	Unknown	35	Chest & abdomen	22	
4	PG	25	Bogotá	Acid	Unknown	48	Face & neck	12	Retaliation
5	YD	18	Bogotá	Acid	Unknown	57	Face & neck	27	
6	LDE	30	Zipaquirá	Acid	Unknown	23	Face & neck	28	Retaliation
7	SAB	31	Bogotá	Acid	Unknown	21	Face & neck	22	
8	MAC	23	Bogotá	Acid	Unknown	21	Face & neck	7	
9	MY	22	Bogotá	Acid	Unknown	35	Face & neck	13	
10	MMA	40	Cajicá	Acid	Unknown	62	Face & neck	15	
11	VE	16	Bogotá	Acid	Known	37	Face & neck	8	Retaliation
12	TJ	18	Bogotá	Acid	Unknown	41	Face & neck	4	
13	GA	22	Bogotá	Acid	Unknown	53	Face & neck	18	
14	LLK	16	Pto López	Acid	Unknown	73	Sexual organs	2	
15	CS	25	Bogotá	Acid	Unknown	21	Face & neck	21	
16	PG	18	Bogotá	Acid	Known		Face & neck	28	Retaliation
17	CM	41	Bogotá	Acid	Known		Face & neck	10	retaliation
18	CS	41	Bogotá	Acid	Known	90	Face & neck	12	Retaliation
19	MS	21	Bogotá	Acid	Unknown		Face & neck	14	
20	GO	19	Bogotá	Muriatic a	Known		Legs		Retaliation
21	NN: niña	14	Bogotá	Acid	Known		Face & neck		Retaliation
22	NMF	21	Cucuta	Acid	Unknown		Face & neck	5	
23	HV	31	Bogotá	Acid	Known	48	Face & neck	32	Retaliation
24	CL								
25	BMA	25	Bogotá	Nitric acid	Unknown		Face & neck	7	
26	FNJ	22	Bogotá	Nitric acid	Unknown		Face & neck	5	
27	DL	25	Tunja	Acid	Unknown		Face & neck		Retaliation
28	EN	31	Bogotá	Acid	Unknown		Face & neck		

Limitations of data: study limitations included the following: (1) not all cases of assault by burning were included in study data. (2) The study was conducted only at Hospital Simón Bolívar and Burn Foundation in Bogota, and some published cases by the newspapers; therefore does not reflect a scenario representing the entire country. (3) Observer and patient biases might exist.