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Incidence of Bite Marks in a Selected Juvenile Population: A Preliminary Report

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ABSTRACT: A study of the frequency of bite marks among sheltered children was conducted for a period of three months in the juvenile care facilities in Las Vegas, NV. The study demonstrated an incidence of 1 545 bite marks per 100 000 population. Analysis of the age, sex, and location of bite marks is presented. The study demonstrated an incidence comparable to diseases such as gonorrhea.

KEYWORDS: odontology, bite marks, child abuse, forensic dentistry, epidemiology

Forms of mutilation of children have been recorded over the centuries as part of religious or ethnic traditions [*1*]. Ritualistic killing, maiming, and severe punishment of children in attempts to educate them, exploit them, or to sometimes rid them of evil spirits have also been part of man's history since early biblical times [*1*].

With the beginning of urbanization and the advancement of technology, more economic value has been placed on the child by society. Harsh treatment has become known as maltreatment of children. The first child abuse case reported in the United States was the Mary Ellen Case in 1874 [*2*]. In an attempt to help the child a social worker placed her in the Society for the Prevention of Cruelty to Animals. Because of this case the Society for the Prevention of Cruelty to Children was founded in New York in 1875 [*2*]. The first recorded bite mark litigation in 1874 corresponds well with this new social awareness [*3*].

Bite mark evidence has become increasingly important in detecting perpetrators in the battered child syndrome [*4*]. There is often a very limited number of people having the opportunity to abuse the child. The New York City Medical Examiners Office finds that the abuser has always been the biter [*5*].

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Only one previous epidemiologic study of human bite marks was located. Marr et al [6] reported that 892 human bites were recorded by the New York City Department of Health during 1977. This figure represents an incidence of 11.8 per 100 000 population per year. Data collected included: day of week and month bite occurred, age and sex of victim, part of body bitten, type of activity in which victim was engaged when bite occurred, and place of occurrence of bite. Results show that the bites were fairly evenly distributed throughout the days of the week. Most bites occurred from March through August, and the fewest were recorded during January and February. Indoor bites and bites of the upper extremities were most frequently reported. More males were bitten than females except in the 10- to 20-year and 55- to 60-year age groups. When the activities associated with bites were known, 60% occurred during fighting.

There appears to be no literature citation referring to the frequency of biting activity associated with child abuse, however, the morbidity associated with significant bites is well recognized [7–9]. The incidence of child abuse is well reported, and can be seen in relationship to communicable diseases in Table 1 [10].

Methods

To gain an awareness of the magnitude of abusive biting, a target group was identified consisting of five registered nurses employed by Clark County Juvenile Court Services, Clark County, NV. Nurses at those facilities medically assess every child detained for juvenile offenses, child abuse, or neglect. The nurses selected to participate in the study all had over seven years of experience and had worked at the facility for periods from one to eleven years.

A forensic odontologist and four dental hygiene students conducted a slide presentation on recognition of bite marks for the five nurses. Four types of bite marks were reviewed: incised or weapon marks without discoloration, incised marks with bruising or discoloration, sucking marks, and drag marks (Fig. 1). Special emphasis was placed on differentiating bite marks from the other forms of physical abuse such as: burns, abrasions, lacerations, and contusions. Following the presentation there was an informal review to test the nurses' ability to recognize bite marks.

All abuse cases and children under the age of three were screened by a full body visual exam and nonabuse cases received an examination of exposed parts of the body as well as questions regarding bruises or marks to their skin. The information gathered from each bite mark victim consisted of date, child's age, sex, location of bite mark, and comments. A form was designed to be completed on each case (Fig. 2). Data was collected from April through June 1982 as a three-month preliminary study and continues as part of a long-term study.

Results and Discussion

During the three-month period from 31 March 1982 to 28 June 1982, 1100 children were examined and 17 children showed evidence of bite mark abuse. This figure represents an incidence of 1 545 per 100 000 sheltered children. The incidence of several other diseases reported by the Clark County Health District for the general population is 68 per 100 000 for

TABLE 1—*Incidence of several communicable diseases and child abuse/neglect for the Clark County area (Las Vegas) during 1982.*

Chicken pox	68 per 100 000
Gonorrhea	993 per 100 000
Herpes	76 per 100 000
Child abuse/neglect	1 050 per 100 000

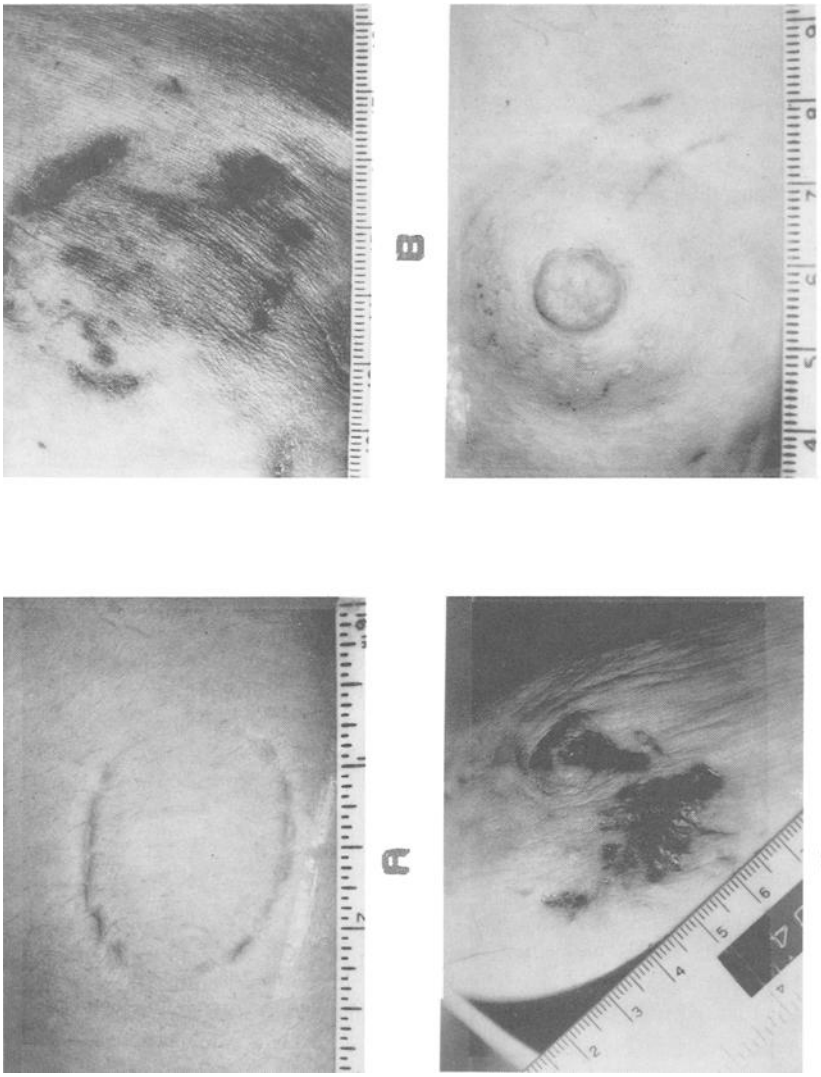

FIG. 1—*Four types of bite marks used for determination of frequency:* (a) *incised or weapon mark without discoloration, measured in inches, 1 in. = 25.4 mm;* (b) *incised marks with discoloration or bruising, measured in millimetres;* (c) *sucking marks, measured in millimetres; and* (d) *drag marks, measured in millimetres.*

BITE STUDY

Number _____	Sex M F
Date _____	Location: Limbs
Age: 0-3	Head and Neck
4-10	Trunk
11-15	Genital-Breast
16-18	Sucking Marks
Race	Description

FIG. 2—*Form designed for reporting of bite mark information.*

chicken pox, 993 per 100 000 for gonorrhea, 76 per 100 000 for herpes and 1050 per 100 000 for child abuse.

Figure 3 depicts the age distribution of human bites among sheltered children during the three-month period. Forty-one percent of the bites occurred within the 11- to 15-year age group. The sex distribution of the reported bite marks is shown in Fig. 4. Male victims were most often in the 4- to 10-year age group and female victims were most frequently in the 11-to 15-year age group. The location of the bite mark is shown in Table 2. Forty-two percent of the marks were located in the head and neck region. The seasonality of bite marks cannot as yet be compared to the previous study by Marr et al [*6*], because this preliminary report covers only a three-month period. A comparison of the location of bite marks reveals that 14.9% of the bites reported in the Marr et al study occurred on the head and neck while 42.9% of the bites in the present study occurred in the head and neck area. No explanation can be offered for this difference in occurrence by location. Since the Marr et al study did not report bite mark locations by age group it is impossible to say whether children's bite marks occur more frequently in different locations than do adult bite marks. The increased

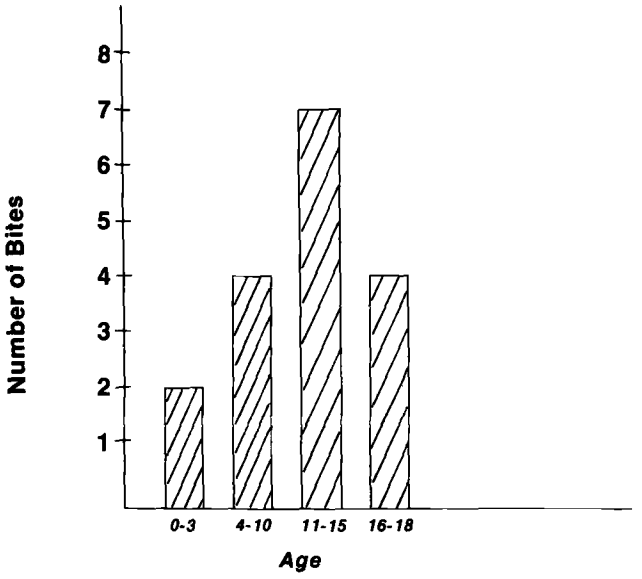

FIG. 3—*Age distribution of human bites among sheltered children during the test period.*

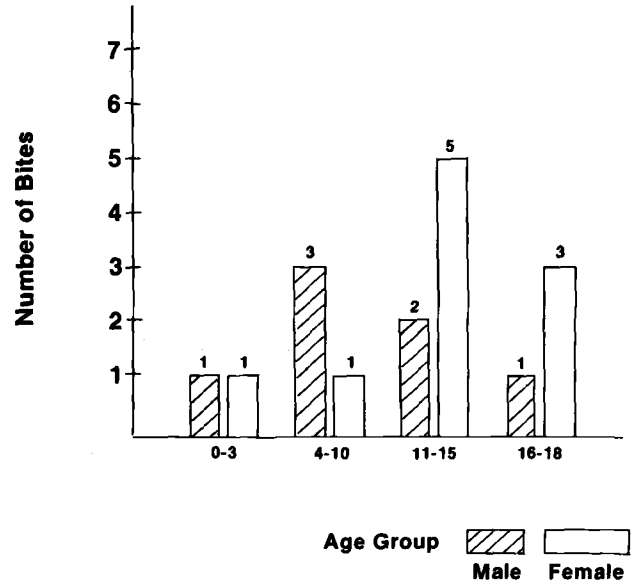

FIG. 4—*Sex distribution of the reported bite marks.*

TABLE 2—*Location of bite marks by body area.*

Body Area	Percent
Limbs	23.8
Head and neck	42.8
Trunk	28.6
Genital-breast	4.8

frequency of female bites over male bites in the preteen and teenage years agrees with the data of Marr et al.

Summary and Conclusions

This preliminary study of biting frequency indicates an incidence of abusive biting far higher than previously reported abuse statistics. When compared with the incidence of several communicable diseases we are left with the conclusion that biting activity is epidemic in this community. As a result of this study significant numbers of child protective workers and health care professionals are being trained in the Las Vegas area to recognize this aspect of child abuse.

Further research needs to be conducted in other parts of the country to confirm that this is a widespread problem. Epidemic biting activity on a national scale would appear to demand more public concern and action through the training of all those associated with children in recognition and referral.

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