Being bitten by a dog can have serious health effects. That is why, never underestimate even the smallest soft tissue injuries inflicted by aggressive animals. This incident may have an impact on the further condition of a patient. From our first aid will also depend the aesthetic and functional effect of the scar on the face. We should pay attention to the use of antibiotic prophylaxis.

The aim of the study was to perform the analysis of the soft tissue bitten injuries made by dogs in patients treated in the years 2004-2009 in the Clinic of Cranio-Maxillo-Facial and Oncological Surgery in Łódź. The most frequent attacked areas were analyzed in the cases of single and multiple face wounds. The dependence of the dog attacks and the alcohol consumption by the victims. The use of an early antibiotic prophylaxis and the number of the infectious complications.

Material and methods. The material studied is a group of 26 patients, including 17 women and 9 men. In the majority patients were older than 20 years old.

Results. The analysis of our data shows that most of the victims were aged 19-30 and 51-60 years. 14 patients have been mutilated on one area of the face, the remaining patients at least two areas. Most injuries underwent upper or lower lip. In all cases, the initial supply has been applied to the wounds. Antibiotic prophylaxis was used in 23 patients. In one of the other three cases, patient who have not been applied to the prevention of complications in the form of phlegmon face. Half of the attack dogs have been known to the victims. All patients had implemented prevention of tetanus, or held-to-date vaccinations. In eight cases, patients reported that at the time of the event they were under the influence of alcohol.

Conclusions. Primary supply of bitten wounds of face at the moment seems to be the standard. In our study, in cases where patients has been treated with an antibiotic, there was no case of infection in the wound. Late complication in the form of phlegmon occurred in one patient who had not used prophylaxis. As the most of the authors note lower lip is the most vulnerable for the bite in the case of adult people. Analysis of our data is consistent with these reports. It has also been found that people under the influence of alcohol are often attacked by unknown dogs.

Key words: wound bitten, dog, antibiotic prophylaxis, treatment of wounds

For many years the dog bites have been a serious medical and social problem not only in Poland. These are the most common injuries inflicted by the Animals (1-5). In many cases these are small wounds healing without any complications. Sometimes they may, however, lead to a serious mutilation of a victim, or even to death. It should be underlined that children are attacked the most often – and these are the youngest ones (1, 5, 6, 7). It demonstrates the fact the the adults underestimate the threats that may be caused by dogs. Our carelessness is astonishing, as the statistics conducted in a lot of countries prove that the dogs
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living in the victim's house or nearby are the culprits, less frequent the strange dogs (1, 6, 7, 8) classified the most often to the aggressive breeds (1, 2, 9). Children are most frequently attacked in the area of face and head (2, 5, 6, 7).

Most bites in adults regards upper and lower limbs (8). Face is the third in turn attack spot (1, 2). It is estimated that about 44,000 people in the USA and 8500 people in Germany is being bitten in the face area every year (3, 5). The most exposed are the following in adults: lips, nose, cheeks, ear and eyelids (3, 4, 9, 10). We are dealing with lacerated wounds, crushed wounds and flap wounds, often including the bitting off. Seldom osseous injuries of a facial part of a skull occurs.

Bitten wounds in the face area mean the problems of an aesthetic and functional supply, but also the risk of an infection. The bacterial flora in such wounds is mixed and includes both the bacteria living on the victim's skin, and also those from the dogs spit (1, 7, 9). It is a rich oxygen and non-oxygen flora with the predominance of the first one (2, 11, 12). The most frequently met pathogens in the dog bitten wounds include: Staphylococcus sp., Streptococcus sp., Pasteurella, and the anaerobes: Bacterioides, Fusobacterium, Porphyromonas, Peptostreptococcus (11, 12). A rare but potentially dangerous bacterium is Capnocytophagia canimorsus that is responsible for a serious life threatening infections at predisposed persons (after splenectomy, alcoholics, having the Hodgkins disease, after steroid treatment) (2, 13, 14).

Most of the bacteria isolated from the bitten wounds is sensitive to amoxicilin, thus the amoxicilin with clavulanic acid is the first-line drug in the infectious prophylaxis (2, 11, 15).

The typical proceedings with bitten wounds is to rinse the wound precisely (preferably with the physiological saline or the antiseptic) in the form of the irrigation, and also the precise surgical dressing (4, 7, 9, 16). Most of the authors recommend to supply the bitten face wound and to suture the wound initially (3, 4, 8, 16). It results from the aesthetic and functional grounds. Rich vascularisation of the tissues in this area contributes to the quick healing of wounds. It should be, however, noted that a wound supply later than 8-12 hours after the injury presents a high risk of infectious complications and requires a definite use of the antibiotherapy (3, 8, 9).

The difficulties in the treatment of bitten wounds stem not only from the possibility of infectious complications, but also from the rabies infection or tetanus. The significant information that we should obtain in the patient's interview are those concerning the time and place of the occurrence and the vaccination of a dog. A particular attention should be paid to the rabies post-exposure prophylaxis.

It concerns older people mostly, who were not covered by the prophylactic vaccination programme. All cases suspected to be infected with rabies should be reported to the State District Sanitary Inspectorate. Detailed guidance concerning the proceedings and the post-exposure vaccination are contained in the Journal of Laws of the Minister of Health No. 12 of 29.10.2010 positon no. 70, Journal of Laws 08.234.1570 and in the WHO guidance of 2005 (17).

The attention should be also paid to preventing the infection with tetanus. Although this bacillus is not a pathogen living in the dog's spit, it may be a spore or in the vegetative form on the contaminated skin.

The aim of the work was to perform the analysis of the soft tissue bitten injuries made by dogs in patients treated in the years 2004-2009 in the Clinic of Cranio-Maxillo-Facial and Oncological Surgery in Łódź. The most frequent attacked areas were analyzed in the cases of single and multiple face wounds. The dependence of the dog attacks and the alcohol consumption by the victims. The use of an early antibiotic prophylaxis and the number of the infectious complications.

MATERIAL AND METHODS

The test material was a group of 26 patients treated in the Clinic and in the Advice Center because of head and neck injuries resulting from the dog bites. 17 women and 9 man were in the test group. The test population is constituted mostly of patients over 20 years. Demographic and therapeutic data and data concerning the injuries were obtained based on the detailed analysis of the history of diseases in all of the tested patients.
RESULTS

The tested group of 26 patients was composed of 17 women (0.065) and 9 men (0.034). The age of tested patients ranged between 8-71 years. The average age was 39.43 years for women and 32 years for men. Figure 1 presents the analysis of age groups of studied patients.

Data analysis led to the conclusion that the most victims were in the age group of 19-30 years and in the age group of 51-60 years. In the youngest group we found one case of an 8-year old child (children's wounds are mostly supplied in the pediatric surgery wards).

As a result of dog bites in 14 victims one face area was injured. Figure 2 presents the analysis of the attacked areas.

In 12 cases there were injuries in at least two areas. Figure 3 presents the analysis of the attacked face areas.

In case of single injuries we noted only three attacked face areas. Both in persons with single injuries, as well as with multiple injuries, the upper or lower lip was injured, and later the cheek. In all of the cases initial wounds supply has been applied, after a thorough rinse and a surgical supply. All the patients were treated within a few hours after the injury. In five cases due to the loss of a lip tissue, a plasty was made using the local lobes.

23 patients were treated with antibiotic prophylaxis. Amoxicillin was used with clavulanic acid, cephalosporins and in 3 cases the clindamycin. 3 patients were not treated with antibiotic prophylaxis. In one of these cases after 10 days since the cheek injury has happened, the complication in the form of phlegmon face occured. It was a 37-year old man without concomitant chronic diseases. The patient was hospitalized. Surgical treatment has been applied, drainage of phlegmon face was done and pharmacological treatment applied – biuforoksym and metronidazole.

Half of our patients – 13 people, have been bitten by their own dogs, or by dogs they knew. The vaccination of a dog has been documented only in 14 cases in a tested group. In the remaining 12 cases this information could not be obtained as the dog has run away or the
owner has not been found. All these cases were directed to the State District Sanitary and Epidemiological Station. All patients were treated with anti-tetanus prophylaxis or had current vaccinations. In eight cases patients said that they were under the alcohol influence during the incident. As to 4 persons we did not obtain any information with this regard. There are 5 women and 3 men in the group. Five of them were attacked by unknown dogs. 5 cases included multiple face injuries.

**DISCUSSION**

Initial supply of a bitten wound of face seems to be nowadays a standard (3, 4, 16). It affects the final cosmetic and functional effect extremely important in that part of a body. Simultaneously, applying the early antibiotic prophylaxis limits the occurrence of inflammation complications (3, 14). In our material in the group of people taking antibiotic, any infection within the wound area has not been observed. Late complication in the form of phlegmon face has occured in one patient, who has not had antibiotic prophylaxis in spite of having received surgical supply and initial dressing of a cheek wound. Many authors makes the prophylactic use of the antibiotic dependent from the time that has elapsed between the injury and the wound supply and the extent of the damaged tissue. A general condition of the patient has also the influence on the mode of action (concomitant diseases) (2, 9, 15). In our opinion, early prophylactic use of the antibiotic prevents the complications in healing of bitten wounds. Moreover, it is hard to clearly set a time frame above which the antibiotic should be used, as even the small wounds in persons with lowered immunity may inflict serious complications.

In accordance with the reports of most authors, the upper or lower lip is mostly exposed to be bitten in adults. Our analysis of data in patients with single and multiple face injuries is coherent with those reports (3, 4, 9).

According to the statistics in literature the most common victim is the owner or the persons that are in the dog’s surrounding. Data obtained by us are consistent with data from literature (1, 15, 18).

Persons under the influence of alcohol constitute in our study about one third of all patients. Most of them are women. This group was most frequently attacked by unknown dogs. In literature we did not find any reports about the influence of consuming alcohol by the victim on the number of the dog bites occurrences. Based on the data that we have gathered about a bigger number of multiple face injury in persons under the influence of alcohol, a thesis may be formed that that may have been the attacks provoked by the victim. It can be indirectly confirmed by the statistical information of other authors saying that the large part of bites is provoked by the victim (1, 6).

Most of the authors underline that the initial supply is the standard proceedings in case of the bitten wounds of face, and that makes optimum conditions for the aesthetic and functional wound healing. Additionally, in our opinion we should pay attention to prophylactic use of the antibiotherapy, especially in persons with lowered immunity and burdened with additional diseases.

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**Photo 1. Bite wound of a lower lip – state after the admission**

**Photo 2. State after dressing the wound with a graft taken from the chick**
Photo 3. Wound during the healing process in the first week

Photo 4. Wound during the healing process in the second week

Photo 5. Bite wound – state after the initial dressing of a wound without introducing antibiotic prophylaxis, infection within the wound

Photo 6. State after the initial cleaning of the wound

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