

Title: BACTERIAL CONTAMINATION AND ANTIBIOTIC SENSITIVITY PATTERN OF ANIMAL BITE WOUNDS: A STUDY IN THE ANTI-RABBIES CLINIC OF SCB MEDICAL COLLEGE, CUTTACK, ODISHA

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Keywords Culture, Sensitivity, Animal bite

Abstract The organisms contaminating animal bites tend to originate from the oral cavity of the offending animal as well as the environment where the injury occurred. The study is an attempt to identify the most common organism in animal bite cases and the most sensitive antibiotic to be used in animal cases

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ABSTRACT:

The organisms contaminating animal bites tend to originate from the oral cavity of the offending animal as well as the environment where the injury occurred. This study is an attempt to identify the most common organism in animal bite cases & the most Sensitive antibiotic to be used in animal bite cases.

Objective:

1. To detect the most common Bacteria found in the animal bite wounds.
2. To find the sensitive antibiotic & suggest the appropriate antibiotics to be used in the treatment of animal bite cases.

Materials & Method : Place of Study: Anti rabies clinic of S.C.B Medical College, Cuttack

Duration of Study: Month of April to May 2015.

Study Subject: 100 Animal bite case reporting to the OPD within 24 hours of the bite and who had not applied any antiseptics on the wound.

Study Instrument: - Wound Swab collected in sterile swab stick. Pre-tested & pre-designed Schedule used.

Study analysis: - SPSS Package (Ver-21) was used.

Observation: Most common biting animal was dog 76% followed by Cat in 12% & monkey in 12%. Out of all the 100 animal bite cases tested for culture sensitivity, no growth was found in 44% cases. The most common bacteria detected were Staphylococcus aureus 40% followed by Enterococcus 6%, Pseudomonas 6%, Citobacter 2% and Klebsiella 2%. The most sensitive antibiotic in animal bite cases was found to be Linezolid 100% followed by Ciprofloxacin 88.5%, Amikacin 88.2%, Levofloxacin 82.4%, Amoxicilline + Clavulanic acid 70.6% & Azithromycin 44.4%. The antibiotic most resistance are Cefuroxime & Cefipime 100% followed by Cefixime 85.7%.

Conclusion: Staphylococcus aureus is the most common organism & Antibiotic most appropriate for treatment of animal bites are Levofloxacin, Ciprofloxacin, Levofloxacin, Amoxicilline+ Clavulanic acid & Amikacin.

Key Words: - Culture, Sensitivity, Animal Bite.

INTRODUCTION

Dog bite wounds account for 0.5% of all emergency department attendances (an estimated 200 000 cases per year).¹ There is debate on the use of antibiotics in the initial management of these wounds, many practitioners would prescribe them routinely on first presentation.² Routine use of antibiotics results in a large number of patients being exposed to side effects and risk of sensitization with no benefits. However the healing of the wound is also important and this is possible if a standard guideline is prescribed by assessing the bacterial contamination and their antibiotic sensitive pattern is understood. The organisms involved tend to originate from the oral cavity of the offending animal as well as the environment where the injury occurred. This study is an attempt to identify the most common organism in animal bite cases & the most Sensitive antibiotic to be used in animal bite cases.

Objectives : 1. To detect the most common Bacteria found in the animal bite wounds. 2. To find the sensitive antibiotic & suggest the appropriate antibiotic to be used

in the treatment of animal bite cases.

Material and Method:

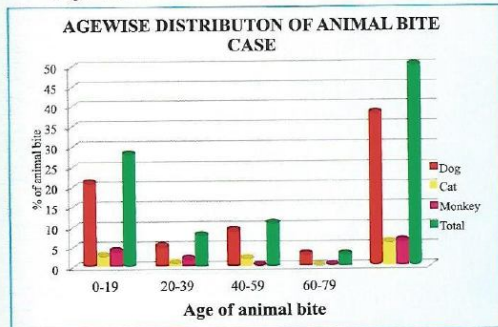
The study was conducted in the Anti rabies clinic of SCB Medical College, Cuttack. In the month of April to May 2015. A total of 100 cases of category III animal bite cases reporting to the ARV clinic within 24 hours of bite and have not applied any antiseptic or washed the wound with soap & water were taken into consideration. The wound swabs of these patients were collected in a sterile swab stick and immediately send to the Microbiology Department for culture and sensitivity of the wound swab. Data was collected using pre-tested and pre-designed Schedule. The data thus obtained was analyzed using SPSS ver.21.

Observations & Discussions

Data was collected from the 100 cases reporting within 24 hours of bite and have not applied any antiseptic or not washed the wound with soap and water were taken into consideration. After collection of data wound swab was collected with a sterile swab stick.

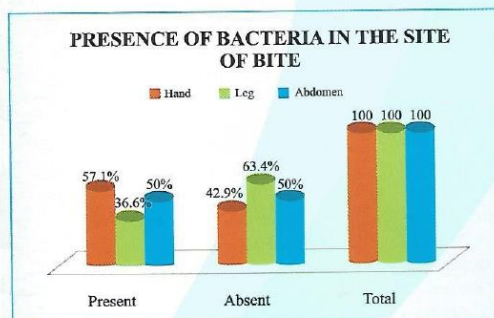
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Graph : 1
Age wise distribution of animal bite cases.



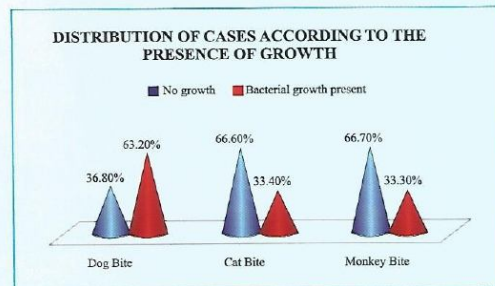
Most of the animal bite cases were in the age group of 0-19 years i.e 56% followed by 40-59 years 22% , 20-39 years 16% and 60-79 years were 6%. In a study conducted by S.R Mazta et.al most common age group of animal bite was 15 to 60 years 63.16% followed by 26.32% in less than 15 years of age³. The most common biting animal was Dog 76% followed by cat and monkey 12% each. In a study conducted by Rizwan S.R most common biting animal was Dog 85% followed by cat 9% and monkey 6%.⁴Out of the total animal bite cases 68% were male and 32% were Female. In the same study by Rizwan S.R it was found that the most common victim of animal bite were male 61% and female were 39%.⁴

Graph II
Distribution cases according presence of bacteria in site of bite.



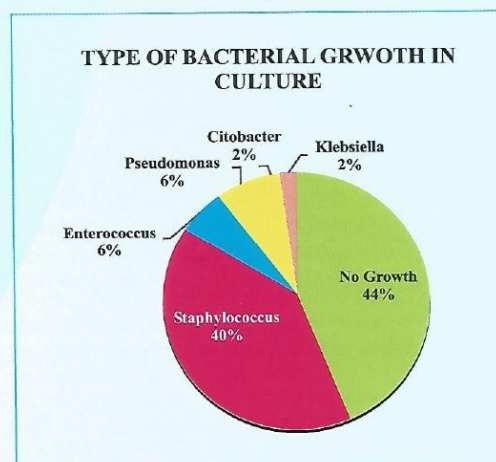
Bacteria was commonly detected in hands 57.1%, followed by abdomen 50% and legs 36.6%.The bacterial infection is more in case of bites in the hands probably because the hands are mostly uncovered as compared to the abdomen & lower extremity and prone for more infection.

Graph III
Distribution of cases according to the presence of growth



Among all the cases of exposure to animals studied, in dog bites bacterial growth was found in 62.2% cases, in cat bites growth was detected in 33.4% cases and in case of monkey bites bacterial growth was detected in 33.3% cases. The high bacterial growth in the swab culture is due to presence of oral pathogen in the biting animal and the presence of bacteria on the victim's hair & skin.

Graph IV
Distribution of cases according to the type of bacterial growth



Out of all the 100 animal bite cases tested for culture sensitivity, no growth was found in 44% cases and growth was found in 56% cases. The most common bacteria detected was staphylococcus aureus 40%, followed by Enterococcus 6%, Pseudomonas 6%, Citobacter 2%, and Klebsiella 2%.

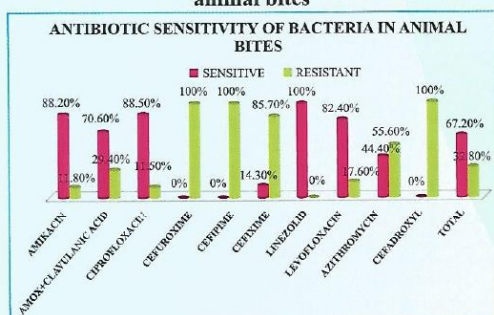
Table1:-
Distribution of Bacteria According to the Biting Animal

Sl. No	Biting Animal	No Growth	Staphylococcus	Enterococcus	Pseudomonas	Citobacter	Klebsiela	Total
1	Dog	28 (36.8%)	34 (44.8%)	6 (7.9%)	6 (7.9%)	0	2 (2.6%)	76 (100%)
2	Cat	8 (66.6%)	2 (16.7%)	0	0	2 (16.7%)	0	12 (100%)
3	Monkey	8 (66.7%)	4 (33.3%)	0	0	0	0	12 (100%)
4	Total	44 (44%)	40(40%)	6(6%)	6(6%)	2(2%)	2(2%)	100 (100%)

Out of the total 76 dog bite cases, in 36.8% cases no growth was found. Staphylococcus was found in 44.8%, Enterococcus & Pseudomonas in 7.9% cases and Klebsiela in 2.6% cases. In a study conducted by Talan D. A et al Pasteurella canis was the most common species isolated from infected dog bite wounds. The second most common species isolated from dog bite wounds in equal frequencies were Streptococcus and Staphylococcus species.⁵

In case of 12 Cat bite cases 66.6% showed no growth followed by Staphylococcus Aureus & Citrobacter 16.7% each. In case of monkey bite had no growth in 66.7% case followed by Staphylococcus in 33.3% cases.

Graph V
Distribution of antibiotics sensitive to bacteria in animal bites



Almost all the bacteria in animal bite cases were sensitive to linezolid 100% followed by Ciprofloxacin 88.5%, levofloxacin 82.4%, Amikacin 88.2%, Amoxicilline + Clavulanic acid 70.6%, Azithromycine 44.4% cefixime 14.3%. Most of the bacteria showed resistance of 100% to Cefuroxime, Cefipime and CefadroxyL.

From among the various antibiotics tested for sensitivity to **staphylococcus**, linezolid was found to be 100% sensitive followed by Ciprofloxacin 88.9%, Amikacin 84.6%, Amoxacilline + Clavulanic Acid

76.9% Azithromycin 44.4%, Levofloxacin 29.3%. Antibiotics Cefixime, Cefipime & Cefuroxime was found to be 100% resistant

Pseudomonas was found to be sensitive to Amikacin 100% followed by Azithromycin 50% & Ciprofloxacin 66.7%. Pseudomonas was 100% resistance to **Amoxycilline + clavulanic acid, cefipime, cefixime and levofloxacin.**

Enterococcus was found most sensitive to be 100% sensitive to Amikacin, Amoxycilline + Clavulanic Acid, Ciprofloxacin, Linezolid & Levofloxacin. It was found 50% resistance to Cefixime and 66.7% resistance to Azithromycin.

Cytobacter was found 100% sensitive to Amoxycilline + Clavulanic acid, Ciprofloxacin, Cefixime. **Cytobacter** was 100% resistance to cefipime and azithromycin

Klebsiella was 100% sensitive to Amakicin & Ciprofloxacin and resistance to Amoxycilline+ Clavulanic acid, Cefuroxime and Ceftazidime.

Conclusions & Recommendations

Dog is the most common biting animal. Males as compared to females are most common victim of animal bites. The age group 0-19 years are commonly bitten by animals. Staphylococcus Aureus is the most common organism found in the animal bite wounds. Since the microbial growth is very high in the wound swab culture prophylactic antibiotic is recommended in animal bite wounds to prevent infection. Antibiotics most appropriate for animal bite treatment are Linezolid, Ciprofloxacin, Levofloxacin, Amoxacilline+ Clavulanic acid & Amikacin.

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