

BACTERIA ISOLATES FROM THE UTERI OF DOES THAT HAD DYSTOCIA

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ABSTRACT

Uterine swabs from 50 does that had dystocia and were operated upon at UNVTH were examined for aerobic bacteria. Of the 50 uteri examined 47 yielded bacterial growth and a total number of 49 bacterial isolates were isolated from the 47 uteri. Of the 49 isolates, 42 were Escherichia coli while 7 were staphylococcus species. All the E. coli isolates were susceptible to ciprofloxacin and norfloxacin. The staphylococcus organisms showed minimal susceptibility to ciprofloxacin, gentamicin, chloramphenicol, and cotrimoxazole. None of the bacteria isolates was susceptible to beta-lactam antibiotics and streptomycin. The most prevalent resistance patterns of the E. coli isolates were ChAmPSTeGnCoCf (28.6), AmPSCoCf (26.2) and ChAmPSTeGnCoCf (16.7). All the staphylococcus isolates showed the same resistance pattern (NoPfcfAmGnTePS). The study has shown that E. coli is the major bacterial agent isolated from the uteri of does that underwent caesarian section in the U.N.V.T.H. The isolates showed high resistance to antibiotics routinely used in the U.N.V.T.H. Thus it is essential for the surgeon to take uterine swabs during caesarean surgery for bacterial isolation and sensitivity testing.

Keywords: bacteria, does, dystocia and uterus

INTRODUCTION

Infection or other diseases of the gravid uterus may cause abortions, fetal death, septic metritis or uterine inertia (Roberts, 1956). This may occur due to invasion of the uterus by either bacteria, fungi or viruses.

The presence of bacteria in the pregnant uterus does not indicate danger to pregnancy (Roberts, 1956). However, in severe bacterial infection or when the maternal resistance is depressed, these bacteria cause severe damage to the placenta and endometrium (Roberts, 1956). This may lead to fetal maceration, abortions, premature births, dystocia and retained placenta. Fasanya *et al* (1987) isolated *E. coli*, *Micrococcus* species and *staphylococcus aureus* from the genitalia of postpartum Savana Brown goats in Nigeria. Recently Ababneh and Degefa (2006) recovered *E. coli* and *staphylococcus* in pure or mixed culture from the uterus of postpartum Balady goats in South Africa. As pointed out by Palmer (2003) the postpartum uterus serves as a good environment for bacterial growth because it is warm, fluid filled and contains a variable amount of necrotic debris. Caesarean surgery usually exacerbates the stress of prolonged labour due to dystocia. This often

results in the lowering of immune status of affected animals. Presence of bacteria in the uterus of the immunocompromised animals can cause serious infections. Prevention and control of such infections require a careful selection of appropriate chemotherapeutic agent which is often based on knowledge of likely infecting agents and their antibacterial sensitivity patterns. The present study was thus carried out at the University of Nigeria Veterinary Teaching Hospital (U.N.V.T.H) to determine the aerobic bacteria commonly present in the uteri of does undergoing caesarean surgery due to dystocia and to determine the antibiotic susceptibility pattern of the isolates.

MATERIALS AND METHODS

Animals: Fifty West African Dwarf (WAD) does presented at the University of Nigeria Veterinary Teaching Hospital (UNVTH) due to prolonged labour were used in the study

Isolation and Identification of Bacteria:

Swabs were taken from the uterus of the does during hysterotomy. Each swab sample was plated out on both blood and MacConkey agar

under aseptic conditions and incubated at 37°C for 24-48 hours. After incubation, the plates were examined for bacterial growth. Discrete colonies on the culture media were examined for colonial characteristics. A colony of each morphologic type was purified on nutrient agar. Purified cultures were gram stained and examined for microscopic characteristics. Bacteria that could not be identified by colonial and microscopic features were subjected to biochemical tests: sugar fermentation, urease production, simon citrate utilization and reaction on triple sugar iron (TSI) media following the procedures described by Cheesbrough (1984). Sensitivity tests were done from the pure cultures using the disc diffusion method (Bauer, 1966). The antibiotic discs used were: Ciprofloxacin (10µg), Norfloxacin (10µg), pefloxacin (10µg), ceftazidime (30µg), Amoxicillin (30µg), Gentamycin (10µg), Chloramphenicol (30µg), Cotrimoxazole (30µg), Tetracycline (50µg), Penicillin (20µg) and Streptomycin (30µg).

RESULTS

Bacteria were isolated from 47 of the 50 uteri samples cultured. A total of 49 bacterial isolates were obtained from the 47 uteri. *Escherichia coli* was isolated in pure cultures from 40 uteri while samples from 5 uteri yielded pure cultures of *Staphylococcus* species. Mixed cultures of *E. coli* and *Staphylococcus* species were obtained from 2 samples.

In summary, of the 49 isolates, 42 (85.7%) and 7(14.3%) were *Escherichia coli* and *Staphylococcus* species respectively. The susceptibility profile of *Escherichia coli*, which is the predominant bacterial agent isolated is presented in Table 1. As shown in the table, the test isolates were highly susceptible to the fluoroquinolones while none of the isolates was sensitive to the beta-lactams used and cotrimoxazole. The resistance patterns exhibited by the *Escherichia coli* isolates are shown in Table 2. The number of antibiotics which the isolates were resistant to ranged from four to seven. A total of nine resistance patterns were recorded with ChAmPS TeGnCoCf (28.6), AmPSCoCf (26.2) and ChAmPS TeGnCoCf (16.7) being the most prevalent patterns.

Table 1: Susceptibility profile of *E.coli* isolates from uteri of dystocia cases (n=42)

	Number susceptible	Percentage susceptibility
Ciprofloxacin (Cp)	42	100
Norfloxacin (No)	29	69.0
Pefloxacin (Pf)	42	100
Ceftazidime (Cf)	0	0
Amoxicillin (Am)	0	0
Gentamicin (Gn)	25	59.5
Chloramphenicol (Ch)	15	35.7
Cotrimoxazole (Co)	0	0
Tetracycline (Te)	8	19.0
Penicillin (P)	0	0
Streptomycin. (S)	0	0

Table 2: Resistance patterns of *E.coli* isolates (n=42)

	Pattern	Number with pattern
1	AmPSCoCf	11 (26.2)
2	ChAmPSCoCf	2 (4.8)
3	NoAmPSCOCf	1 (2.4)
4	AmPSTeGnCoCf	2 (4.8)
5	ChAmPSTeGnCoCf	7 (16.7)
6	NoAmPSTeCoCf	4 (9.5)
7	ChAmPSTeGnCoCf	12 (28.6)
8	NoChAmPSTeGnCoCf	2 (4.8)
9	NoChAmPSTeGnCoCf	1 (2.4)

Values in parenthesis are in percentage.

DISCUSSION

In this study, *Escherichia Coli* and *Staphylococcus* species were the aerobic bacteria isolated from the uteri of does that had dystocia. These bacteria were among the organisms frequently isolated from the uterus of postpartum does and cows (Ababneh and Degefa, 2006.; Kaczmarowski *et al.*, 2004; Smith and Risco, 2002; Montes and Pugh, 1993). These organisms are said to gain access to the uterine cavity and placenta via the cervix at the time of service (Roberts, 1956). It is also suggested that following stress, these organisms reach the fetus and placenta via haematogenous spread or by ascending the genital tract (Arthur *et al.*, 1998). It is of importance to note that the 47 uteri from which bacteria were isolated contained dead emphysematous fetuses. In intrauterine fetal death, free gas in the peritoneal cavity is said to be due to bacterial infection (O'Brien, 1978). This then suggests that these bacteria may either be responsible for the in-utero death or may be opportunistic bacteria which ascended to the uterus following the stress of dystocia. The

source of the uterine bacteria notwithstanding, the clinical importance of this finding is however significant. During dystocia, uterine rupture may occur leading to bacterial contamination of the peritoneal cavity with subsequent peritonitis and septicaemia. This finding also highlights the importance of choosing appropriate antibiotic for post-operative therapy. During the post-operative period, antibiotics are usually administered to prevent post operative sepsis. These antibacterials are often used without prior knowledge of possible bacterial pathogens or their susceptibility to antibacterial agents Neu (1992). The choice of an antibiotic is usually based on individual preference, availability and convenience. It is therefore essential for the surgeon to take uterine swabs during caesarean section for culture and sensitivity profile.

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