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ISOLATION, IDENTIFICATION, ANTIBIOGRAM AND PATHOGENECITY TESTING OF *Klebsiella pneumoniae* FROM A CASE OF PNEUMONIA IN CALF

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Introduction

Pneumonia, often of a multifactorial etiology continues to be an important health problem in calves. *Klebsiella pneumoniae* are opportunistic pathogens and are associated with respiratory infections in a wide variety of species. Allan(1977) reported *Klebsiella sp.* as one of the causative agents of respiratory tract infections in calves. The present study deals with a case of death caused by pneumonia in a calf where *Klebsiella pneumoniae* was identified as the pathogen involved.

Materials and Methods

A calf died of respiratory disease was presented for postmortem. The postmortem lesions observed were petechiae in liver and pericardium, congestion of lungs and spleen, and marked pneumonia. Representative portions of lung tissue showing pneumonic lesions were collected aseptically and carried to laboratory preserved over ice. Loops full of lung tissue were inoculated onto blood agar and incubated at 37°C for 24h under aerobic and microaerophilic conditions. The bacteria isolated was further identified as per Barrow and Feltham(1993) and Quinn *et al.*(2002). Antibiotic sensitivity was done as per the standard single disc diffusion of Bauer *et al.*(1966) against 12 antimicrobials. Pathogenecity testing of the isolate was done by inoculating Swiss albino mice of six to eight weeks of age intraperitonealy with 0.2ml of inoculum containing approximately $3x10^8$organisms/ ml in sterile normal saline. Control mice were inoculated with 0.2 ml of sterile normal saline.

Result

After 24h incubation at 37°c the blood agar revealed white mucoid colonies that were slimy to semifluid in consistency. They were lactose fermenters, producing pink colonies on Mac conkey agar. On EMB agar mucoid colonies with semi fluid consistency was produced. IMViC test gave a result of (-+-+). Urease test was found positive. Details of characterization are given in Table I. The organism was identified as *Klebsiella pneumoniae* in accordance to Barrow and Feltham (1993) and Quinn *et al.* (2002). The isolate was tested for antimicrobial sensitivity and resistance against 12 antimicrobials. The isolate was found sensitive to ampicillin, chloramphenicol, co-trimoxazole, gentamicin, cefotaxim and pefloxacin. Resistance was shown to cloxacillin, amoxicillin, pencillin, streptomycin, oxytetracycline and erythromycin. *Klebsiella pneumoniae* isolate caused death of mice after 72h post inoculation of 0.2mlof $3x10^8$organisms via intraperitoneal route. On postmortem the gross lesions in the internal organs of dead mice were petechiae in liver and pericardium and congestion of lungs and spleen. The organism could be re-isolated from the heart blood, lung liver and spleen of dead mice. The control mice remained healthy even after 72h post inoculation.

Discussion

Klebsiella pneumoniae has been well documented as an etiologic agent of respiratory tract infections in a wide variety of species. Its isolation in the present study correlates with the findings of Allan (1977), Brisse and Deujkeren (2005). The biochemical characteristics of the isolate were in concordance

Table I: Identification of Klebsiella Pneumoniae

TEST	REACTION
Gram's reaction	Gram –ve
Morphology	Rods
Motility	-ve
Growth in air	+ve
Growth anaerobically	+ve
Growth on Mac Conkey agar	Pink coloured colonies
Haemolysis	+ve
Catalase	+ve
Oxidase	-ve
O/F of glucose	F
Simmon citrate	+ve
Urease	+ve
MR	+ve
VP	-ve
Indole	-ve
Sugar fermentation test	
Adonitol	+ve
Arabinose	+ve
Cellobiose	+ve
Dulcitol	+ve
Inositol	+ve
Lactose	+ve
Maltose	+ve
Mannitol	+ve
Rafinose	+ve
Rhamnose	+ve
Salicin	+ve
Sorbitol	+ve
Sucrose	+ve
Trehalose	+ve
Xylose	+ve

with that of Barrow and Feltham (1993) and Quinn *et al.*(2002). Merchant and Packer (1971) reported that *Klebsiella pneumoniae* produce mucoid colonies which are slimy and semifluid in consistency. High degree of sensitivity of Klebsiella isolates to gentamicin was reported by Eguchi *et. al.* (1988) which was found true also with the isolate obtained in the present study. Perusal of literature has not shown any refererice regarding the pathogenecity of *Klebsiella pneumoniae* in mice on intraperitoneal inoculation. However the isolate in the present study was found pathogenic enough to cause death of mice.

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