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Original Research Paper

Microbiology

PREVALENCE OF COAGULASE NEGATIVE STAPHYLOCOCCUS: A TERTIARY CARE HOSPITAL IN PATNA

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ABSTRACT

Background: Coagulase-negative staphylococci (CoNS) have been recognized as an important agent of human infection since the past five decades. Coagulase negative staphylococci have long been regarded as apathogenic but their important role as pathogens and their increasing incidence have been recognized coagulase negative staphylococci heve become inceasing resistant to multiple antibiotics. there are 38 species of CoNS isolated from various human infections.

Material and Methods: A observational descriptive study conduct on 71 samples collected from the hospitalized patients and nonhospitalized patients. Various samples like Urine, body fluids, pus, blood, swabs (wound, high vaginal, nose, throat) and other clinical samples were collected from patients attending outpatient departments (OPD) and admitted in wards and ICUs in patna medical college and hospital patna Bihar, and processed for isolation and identification of Coagulase negative Staphylococcus (CONS) by the phenotypic methods.

Concussion: In this study, the most common species identified was *S. epidermidis*.the molecular approach is for the most part a consistent methodin determining whether a growth the blood culture is a pathogen.

KEYWORDS : coagulase negative Staphylococcus, Infection, Urine, nasal polyp.

INTRODUCTION:

Coagulase negative Staphylococci are wide spread in nature although they are mainly found living on the skin, skin glands and mucous membrane of mammals. They may be found in the mouth, blood, mammary glands, intestinal, genitourinary and upper respiratory tracts of the hosts. *Staphylococcus* generally have a benign or symbiotic relationship with their host; however they may develop the lifestyle of a pathogen if they gain entry into the host tissue through trauma of the cutaneous barrier, inoculation by needles or direct implantation of medical devices. Infected tissues of host support large populations of staphylococci and in some situations they persist for long periods CoNS are the main pathogens responsible for prosthetic joint infections.

Coagulase-negative staphylococci (CoNS) have been recognized as an important agent of human infection since the past five decades. Currently, there are 38 species of CoNS isolated from various human infections. The important among them are *Staphylococcus saprophyticus*, *Staphylococcus epidermidis*, *Staphylococcus haemolyticus*, *Staphylococcus lugdunensis*, *Staphylococcus hominis*, *Staphylococcus capitis*, *Staphylococcus warneri*, and *Staphylococcus xylosus*. Earlier CoNS were taken as insignificant contaminant; now, they are regarded as major cause of nosocomial bloodstream infections, urinary tract infections, skin and soft-tissue infections, and various indwelling device-related and prosthetic implants infections. The significant change in the patients' profile, that is, increased number of premature newborns, elderly patients, chronically ill patients, and immunocompromised patients along with greater use of indwelling or implanted foreign body has made CoNS a predominant nosocomial pathogen. Colonization of skin and mucous membrane of the inpatient by multidrug resistant CoNS strain and its transmission by hands of health-care workers is critical step in the making CoNS a successful nosocomial pathogen,coagulase negative staphylococci is still based on diagnostic procedures that fulfill the clinical need to differentiate between staphylococcus aureus and those staphylococci classified historically as being less or nonpathogenic.

As normal inhabitants of human skin, it is often difficult to define, if they are contraminants.

MATERIAL AND METHODS

A observational descriptive study. A total of 71 samples were collected from the Department of microbiology patna medical college and hospital patna Bihar. hospitalized patients and nonhospitalized patients. Study Samples**:** Various samples like Urine, body fluids, pus, blood, swabs (wound, high vaginal, nose, throat and other clinical samples were collected from patients attending outpatient departments (OPD) and admitted in wards and ICUs in hospital and processed for isolation and identification of Coagulase negative Staphylococcus (CONS) by the phenotypic methods. Various samples collected with all aseptic precaution and transported to microbiology laboratory.

RESULTS

Out of total 71 samples 41 (57.74 %) samples from Male while 30 (42.25 %) from Female patient. Out of total 71 samples, maximum from age group between 11-20 years i.e. 21.12% while minimum from <80 above years of age i.e. 2.81%. we had maximum urine samples(40%) , followed by pus(15.49%), sputum (16.90%), high vaginal swab(1.40%), blood(2.81%), CSF (1.40%), pleural fluid(1.40%), ET secretion(2.81%) and Ear swab(8.45%), semen (1.40%).

Table 1: Distribution of CoNS species in various clinical samples

CoNS Species	Urine	Pus	Blood	Sputum	HVS	Semen	Nasal swab	ET Secretion	Total
Staphylococcus epidermidis	7	6	3	6	1	1	-	1	25
Staphylococcus haemolyticus	3	2	3	2	1	-	-	-	11
Staphylococcus lugdanensis	1	1	2	-	1	-	-	-	5
Staphylococcus schleiferi	1	-	-	-	1	-	1	-	3
Staphylococcus saprophyticus	17	-	1	-	2	-	3	1	24
Staphylococcus xylosis	-	1	1	-	-	1	-	2	5

*Staphylococcus epidermidis(*35.21%) isolated more in our study. Second most common species was *Staphylococcus saprophyticus*(33.80%). Other species that isolated were as *Staphylococcus haemolyticus (15.49%), Staphylococcus lugdanensis (7.04%), Staphylococcus schleiferi*(4.22%) and *Staphylococcus xylosis*(7.40%)

DISCUSSION

The present study was conducted in the department of microbiology Patna medical college and hospital patna Bihar, The purpose of this study was isolation, identification and antibiogram of Coagulas negative Staphylococcus isolated from various clinical samples at a tertiary care hospital.

In our study the CONS infection was more common in males (57.74%) than in females (42.25%) in the present study, which is similar to other by Usha M. G., Shwetha D. C., et al.[6] also showed that male had more infection with CoNS than females. In the present study out of the total of 71 relevant clinical samples collected, 71 (15%) samples were identified as Coagulase negative Staphylococcus, which is similar to other by C.Roopa[7], revealed growth of Coagulase negative Staphylococcus on culture.

They may not evoke sufficient inflammatory responses and a group of patients withCoNS blood stream infections may not have typical clinical manifestations and laboratory indices of the infection. In addition to the standard criteria for infections.

The highest numbers of CoNS isolates were *Staphylococcus epidermidis* (38.33%) followed by Staphylococcus *saprophyticus* (35%). The other species isolated were *Staphylococcus* haemolyticus (15%), *Staphylococcus lugdanensis* (5%), *Staphylococcus schleiferi* and *Staphylococcus xylosis* both are (3.33%). In our study, the most commonly isolated species was *S. epidermidis*, similar to other studies as shown by Subadra Singh *et al,* where the rate of isolation was 40%63**.** Sheik *et al*[8]. and Asangi *et al.*[9] also showed that *S. epidermidis* is the most commonly isolated species from clinical specimens, seen in 19.40% and 44.8%, respectively.

CONCLUSION

The most common species identified was *S. epidermidis*. determining whether a growth in the blood culture is a pathogen.

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