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A Bacteriological Study of Localized Skin Infection in Human Beings

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ABSTRACT

Present paper represents the bacteriological study of localized skin infection in human. Pathogenic bacteria are causes the various disease including skin disease. Sample was collected from the infected person and pouring on the specific media and observed the bacterial colony after 24- 48 hour. Skin disease causing bacteria Staphylococcus, Streptococcus was observed in abundance, Staphylococcus aureus was seen in abundance Streptococcus pyogens was present and Corynebactrerium spp. and cutibacterium acne was seen less abundance. These are responsible for skin infection so proper awareness and antibiotic treatment must be for prevention of the disease.

KEYWORDS: *Staphylococcus, Antibiotics, Bacteriological, skin Infection, pathogenic*

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INTRODUCTION

Bacteria is living organism they are found in every place of the world but abundance of bacteria are in the place of humus and moist. They are may be pathogenic of living beings, it cause dangerous disease in human. Skin has interfaces with the environment it plays an important role in protecting the body against pathogens. It is also called first line of defense of our body. The skin is a milieu for controlled bacterial growth. The upper most epidermal layer is covered by a protective keratinous surface which allows the removal of microorganisms via sloughing off of keratinocytes and acidic sebaceous secretion .Skin supports the growth of commensal bacteria, which protects the host from pathogenic bacteria. Skin and soft tissue infections are among the most common infections, and may lead to serious local and systemic complications. Environmental and local factors, host immunity, and organism adherence and virulence are intricately related to cutaneous infection. Gram-positive bacteria include *Staphylococcus*, and *Streptococcus* spp , *Corynebactrerium spp. and cutibacterium acne. Staphylococcus aureus* and *Streptococcus pyogenes* are notoriously pathogenic in the skin. In order for bacteria to be pathogenic, they must be able to adhere to grow on and invade the host. Bacteria possess numerous virulence genes that allow for growth in these privileged niches. In Some cases like skin injury, cutting, damage, skin, lesions, wounds etc. Permit the harmful bacteria for entering in to outer skin surface in our body. Epidermal infections caused by *S. aureus* and *S. pyogenes*. Some skin infections cover a small area on the top of the skin other infection can go deep in to skin or spread to a larger area. Harmful skin bacteria like- Streptococcus and Staphylococcus etc. can cause local and severe skin diseases like pimple, impetigo, cellulites, abscesses Etc. The skin is a barrier that limits invasion and growth of pathogenic bacteria.

What is pus- Pus is an accumulation of this dead material. Many types of infection can cause pus. Infections involving the bacteria staphylococcus aureus or streptococcus pyogens are especially prone to pus. Both of these bacteria release toxins that damage tissue and creating pus.

What causes skin infections- skin infections are caused by different kinds of germs for example,
Bacteria causes-cellulitis, Impetigo, and abscess, pimple, and staphylococcal infections.

Higher risk for a skin infection are-

- Have a poor circulation
- Have diabetes
- Are older
- Have an immune system disease such as HIV/AIDS
- Have a weekend immunity/immune system because of chemotherapy or other medicines that suppress your immune system.
- Have to study in one position for a long time or you are paralyzed.

- If you are malnourished
- Have excessive skin folds which can happen if you have obesity.

Symptoms of the skin infections-
The symptoms depend on the type of infections. Some symptoms that are common to many skin infections include rashes, swelling, redness, pain, pus and itching.

Material Method- The sample was collected from infected person who is carrying localized skin lesions And aseptically tested by standard microbiological methods APHA in a Lab (1992). Sterile swab were used for aseptic collection of pus sample from the lesion after cleaning the area around the lesion with 70% ethyl alcohol. The sterile cotton swab following puncturing of a fresh closed lesion with a sterile needle. The swab was inoculated on to plate of Nutrient agar media, Manitol salt agar and Blood agar media. By rolling the swab over the media with the help of streaking method.These plates were incubated at 37°C for 24-48 hrs.

Result and Discussion-
In the present study many types of pathogenic bacteria found in suspected sample, which is responsible for severe skin infection there are three most commonly isolated bacteria's are *Staphylococcus aureus*, *Streptococcus pyogen*, and micrococcus leutius. Reported that *Stayphlococcus aureus* and *Streptococcus pyogen* was the commonest isolate from the wound infections. *staphylococcus aureus* is aerobic bacteria,which was isolated from all body sites. Bacterial infection commonly called Pyoderma caused by *staphylococcus aureus* and *Streptococcus*. All type of pyoderma skin infection most commonly caused by *staphylococcus aureus* maximum cases about 53% were of Impetigo followed by Folliculitis, Furnculosis, and Abscesses Carbuncle. Pyoderma most commonly affected in children belonging to age group of 7 to 12 years old children. Cutibacterium acnes is formerly called propionibacterium acnes,it is anaerobic,Gram positive bacterium(rod).

S. No.	Bacterial species	Number of colonies	Skin Disease
1	*Streptococcus pyogens*	++	Cellulitis ,impetigo
2	*Staphylococcus aureus*	+++	Abscesses , acne
3	*Corynebactrerium spp.*	+	Pitted keratolysis
4	*Cutibacterium acnes*	+	Acne

(+)= under ten colonies, (++)= under twenty colonies, (+++)= more than thirty colonies.

Pyoderma defines as any purulent skin infection. Pyogenic infection is characterized by local inflammation present with pus formation. This infection may be endogenous or exogenous. The human skin infections are caused by both aerobic and anaerobic bacteria have been implicated in wound infections.

Streptococcus pyogens- streptococcus pyogens is gram positive, non motile, non spore forming, aerotolerent bacterium. Blood agar media was added to petriplates and incubated at 35-37°c for 24 hours. plates are showing the colonies of *streptococcus pyogens* with zone of Beta-hemolysis (2-3 mm zone size) appeared.

Staphylococcus aureus- staphylococcus aureus is gram positive bacteria that are cocci –shaped and that to be arranged in clusters that are describes as grape-like clusters.Manitol salt agar media was added to petriplates and incubated at 37°c for 24 hours.plates are showing the colonies of *Staphylococcus aureus* of yellow colour with yellow zones.

Impetigo- Impetigo is contagious bacterial infection. Mostly affects children. It is also called school disease. It is caused by *Staphylococcus aureus* , and *Streptococcus Pyogen.* Symptoms of these are appeared on outer layers of skin like - Face, Arm, and Legs.

Fig: Impetigo infection

Cellulitis-
Cellulites is a spreading bacterial infection of the skin Cellulites is commonly caused by *staphylococcus aureus* and *Streptococcus pyogens.* Symptoms of these disease are Redness, Pain, Inflammation, abscess pus formation on outer layers of skin and fever.

Fig: Cellulitis infection

Abscesses-An Abscess is collection of Pus within the tissue of the body. Usually caused by *Staphylococcus aureus* Symptoms are Redness, Pain, Warmth, and swelling may be filled with pus.

Fig: Abscesses infection

Cutibacterium acnes- *cutibacterium acne* formerly called *propionibacterium acnes*. Typically aerotolerent, anaerobic, gram-positive bacterium, rod shaped, non motile and non spore forming bacterium that is part of the human skin flora. Blood agar media was added to petriplates and incubated at 37°c for 24 hours. Plates are showing the colonies of *cutibacterium acne* with zone of Beta-hemolysis with yellow areas.

Acne-Acne is the most common problem in humans. Acne is a chronic inflammatory disease of the skin. Acne is a disorder of the Hair follicle commonly caused by -Acne bacteria. Symptoms are-Redness, Swelling, irritation, inflammation etc

Fig: Acne infection.

Conclusion-

The present study revealed the presence of pus filled wound infection causing bacteria those are capable of causing various human illness the bacterial isolate screened in various skin & soft tissue infection collected from infected persons. The commonest isolates of pus filled infection are *staphylococcus aureus*, *streptococcus Pyogen*. These bacterial strain cause Pyoderma infection included impetigo abscess furuncle, carbuncle, etc. the antimicrobial activity varies from time to time from place to place. Minor bacterial infection may resolve without treatment. However persistent and serious bacterial infections are treated with antibiotics, cream, gels, and solutions. To diagnosed a skin infection, health care provides will do a physical exam and ask about you symptoms. You may have Laboratory test to identify what type of infection you have. Hence regular monitoring of bacterial susceptibility to antibiotics in skin and soft tissues infections is essential for appropriate therapy, good personal hygiene, essential diagnostic test etc.

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