Infection of Leg, Knee or Ankle Inflammation in Patients Referring to Orthopedic Ward

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***Abstract*—**The aim of this study was to determine the common bacterial infection in patients with leg, knee or ankle inflammation refereeing to orthopedic ward. The documentary data of 32 patients (17 female and 15 male) with leg, knee or ankle inflammation were collected and statistically studied using descriptive statistics. Our findings indicated that the right and left leg inflammation were higher in male and females, respectively. Age mean was 58.64 and 40.68 years old in females and males, respectively. 59% of cases had bacterial infection. Staphylococcus and pseudomonas infection were higher than other types of bacterial infections.

***Index Terms*—**Bacterial infection, Leg, Hand, Infection.

I. Introduction

Leg, knee or ankle swelling can also be caused by inflammation the tissues. Inflammation may be a normal response to injury or disease, or it may be due to other factors including bacterial pathogens. [1]. Inflammation is part of the complex biological response of body tissues to harmful stimuli, such as pathogens, damaged cells, or irritants, and is a protective response involving immune cells, blood vessels, and molecular mediators. [2] The signs of inflammation are heat, pain, redness, swelling, and loss of function. [1] Inflammation is a generic response, and therefore it is considered as a mechanism of innate immunity, as compared to adaptive immunity, which is specific for each pathogen [3]. The aim of this study was to determine the common bacterial infection in patients with leg, knee or ankle inflammation refereeing to orthopedic ward.

II. Material And Methods

The documentary data of 32 patients with leg, knee or ankle inflammation referring to orthopedic ward were collected and statistically studied using descriptive statistics.

III. Results

Our findings indicated that the right and left leg inflammation were higher in male and females, respectively (Figure I).

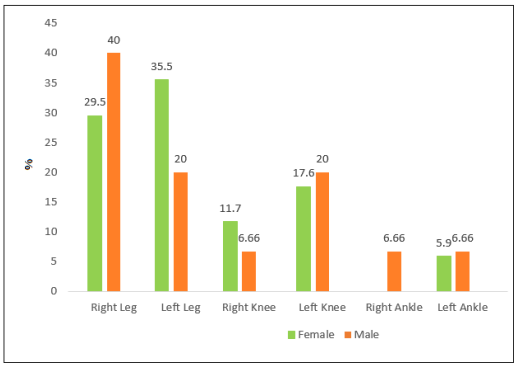

Fig. 1: Percentage of female and male patients with leg, knee or ankle inflammation refereeing to orthopedic ward.

Age mean was 58.64 and 40.68 years old in females and males, respectively (Figure II).

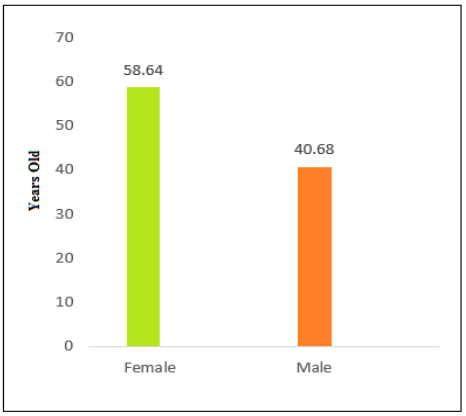

Fig. 2: Age mean in male and female patients.

59% of with leg, knee or ankle inflammation had bacterial infection (Figure III).

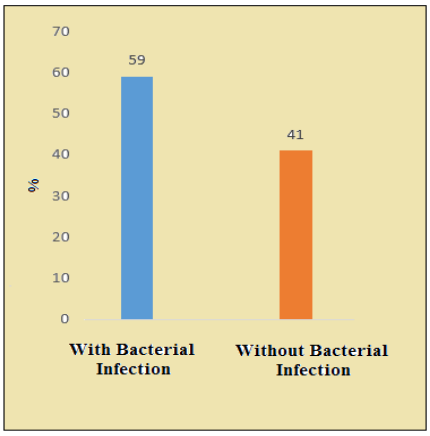

Fig. 3: % of patients with or without bacterial infection.

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Figure IV shows the bacterial infections in patients with leg, knee or ankle infections; according to which, Staphylococcus and pseudomonas infection were higher than other types of bacterial infections.

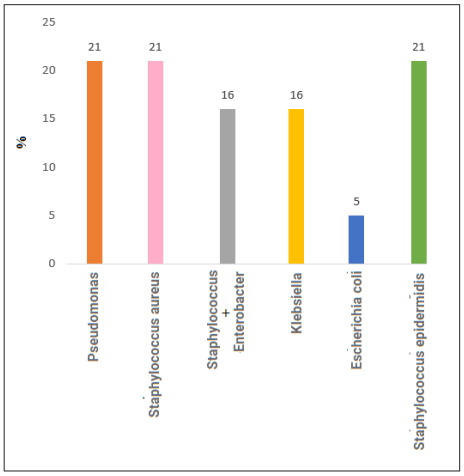

Fig 4: The bacterial infections in patients with leg, knee or ankle inflammation.

IV. Discussion

Our findings indicated that 59% of cases had bacterial infection and staphylococcus and pseudomonas infection were higher than other types of bacterial infections in patients with leg, knee or ankle inflammation. Staphylococcus aureus is a Gram-positive, round-shaped bacterium that is a member of the Firmicutes, and it is a member of the normal flora of the body, frequently found in the nose, respiratory tract, and on the skin. [4] While S. aureus usually acts as a commensal bacterium, asymptomatically colonizing about 30% of the human population, it can sometimes cause disease. In particular, S. aureus is one of the most common causes of bacteremia and infective endocarditis. Additionally, it can cause various skin and soft tissue infections, particularly when skin or mucosal barriers have been breached.[5] Staphylococcus epidermidis is a Gram-positive bacterium which is part of the normal human flora, typically the skin flora, and less commonly the mucosal flora. [6] Although S. epidermidis is not usually pathogenic, patients with compromised immune systems are at risk of developing infection. S. epidermidis is a particular concern for people with catheters or other surgical implants because it is known to form biofilms that grow on these devices.[7]

Pseudomonas is the most common cause of infections of burn injuries, and is the most frequent colonizer of medical devices (e.g., catheters). Pseudomonas can be spread by equipment that gets contaminated and is not properly cleaned or on the hands of healthcare workers. [8]

In line with our finding it has been shown that staphylococcus aureus is one of the most common nosocomial pathogens which can cause a broad spectrum of infections [9]. It has also been shown that staphylococcus aureus is a major human pathogen that is associated with diverse types of local and systemic infection characterized by inflammation dominated by polymorphonuclear leukocytes. [10] The research also show that staphylococcus epidermis releases staphylococcal factors responsible for the activation of the acute inflammatory host response. [11].

V. Conclusion

Our findings indicate that 59% of with leg, knee or ankle inflammation had bacterial infection. Staphylococcus and pseudomonas infection were higher than other types of bacterial infections.

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References

[1] Agren MS, Eaglstein WH, Ferguson MW, Harding KG, Moore K, Saarialho-Kere UK, Schultz GS. Causes and effects of the chronic inflammation in venous leg ulcers. Acta dermato-venereologica. Supplementum. 2000; 210:3-17.

[2] Ferrero-Miliani L, Nielsen OH, Andersen PS, Girardin SE. Chronic inflammation: importance of NOD2 and NALP3 in interleukin-1β generation. Clinical & Experimental Immunology. 2007 Feb 1;147(2):227-35.

[3] Hall JE. Guyton and Hall textbook of medical physiology. Philadelphia, PA: Saunders Elsevier. 2011:107.

[4] Masalha M, Borovok I, Schreiber R, Aharonowitz Y, Cohen G. Analysis of Transcription of theStaphylococcus aureus Aerobic Class Ib and Anaerobic Class III Ribonucleotide Reductase Genes in Response to Oxygen. Journal of bacteriology. 2001 Dec 15;183(24):7260-72. https://doi.org/10.1128/JB.183.24.7260-7272.2001

[5] Tong SY, Davis JS, Eichenberger E, Holland TL, Fowler VG. Staphylococcus aureus infections: epidemiology, pathophysiology, clinical manifestations, and management. Clinical microbiology reviews. 2015 Jul 1;28(3):603-61. https://doi.org/10.1128/CMR.00134-14

[6] Fey PD, Olson ME. Current concepts in biofilm formation of Staphylococcus epidermidis. Future microbiology. 2010 Jun;5(6):917-33. https://doi.org/10.2217/fmb.10.56

[7] Salyers AA, Whitt DD. A molecular approach. Bacterial pathogenesis, 2nd edn. Washington, DC: ASM Press; 2002.

[8] Centers for Disease Control and Prevention. Pseudomonas aeruginosa in healthcare settings. (2014).

[9] Rahimi F. Characterization of Resistance to Aminoglycosides in Methicillin-Resistant Staphylococcus aureus Strains Isolated From a Tertiary Care Hospital in Tehran, Iran. Jundishapur J Microbiol. 2016;9(1):e29237. https://doi.org/10.5812/jjm.29237

[10] Gómez MI, Lee A, Reddy B, Muir A, Soong G, Pitt A, Cheung A, Prince A. Staphylococcus aureus protein A induces airway epithelial inflammatory responses by activating TNFR1. Nature medicine. 2004 Aug;10(8):842. https://doi.org/10.1038/nm1079

[11] Vuong C, Otto M. Staphylococcus epidermidis infections. Microbes and infection. 2002 Apr 1;4(4):481-9.