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RESEARCH ARTICLE

THE IMPACT OF HIGH ALTITUDE AREA VIA THE BACTERIAL PATHOGENS INDUCED THE NEONATAL SEPSIS, TAIF, KSA.

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Key words:-

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Abstract

The search was conducted on "The impact of high altitude (HA) area via the bacterial pathogens induced the neonatal sepsis (NS), Taif, KSA", the incidence of NS microbial causes resulted 13.1% positive. The incidence of microbial causes were (Gram-positive bacteria [GPB], Gram-negative bacteria [GNB] and yeasts) were as (14.4, 82.0 and 3.6%) respectively. The incidence of NS-GPB, as the predominant was *Enterococcus Species (Spp)* 7.7%, *Staphylococcus (Staph.) epidermidis* 5.2%, and (*Staph. saprophyticus*, group B *Streptococcus* [GBS] and *Streptococcus [Strept.] Spp*) gave the same percent as 0.5%. The incidence of NS-GNB as the predominant was *Escherichia coli (E. coli)* 66.8%, *Klebsiella pneumonia (KP)* 9.8%, *Pseudomonas aeruginosa (PA)* 2.8%, *Citrobacter Spp* 1.4% and (*Proteus vulgaris* and *Providencia Spp*) gave the same percent as 0.6%. The whole arrangement of NS bacteria were isolated, as the predominant were *E. coli* 66.8%, *KP* 9.8%, *Enterococcus Spp* 7.7%, *Staph. epidermidis* 5.2%, the other bacteria were between (2.8-0.5%). The current study found that, the NS revealed different in HA than normal altitude (NA) area, that because of the enhanced causes at HA area and climates changes, that factors might lead to a higher incidence of NS. There were a differences in the proportions and types of causing pathogens. Therefore, it concluded that necessary to prove the HA area which had special health impact on the residents and should be investigated by more researches to take the recommended "Residents Proper Preventive Health Measures" to reduce the NS morbidity and morbidity rates, as they were in a critical ages.

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Introduction:-

NS is a systemic bacterial infection in the first month, was significant as maximum death reasons, equaled to 10% had infected in developing nations[1], were classified to early or late[2]. It included risk in economic and neonate conditions[3], laboratory tests had helpful diagnosis[4], bacterial causes were altered[5], it was needed to conduct episodic observation design of bacterial NS[6]. At 1981, GBS was public caused in advanced nations[7], at 2000, the major causes of NS were GNB[8]. At 2011 in KSA, were CoNS and *Staph. aureus*[9], at 2014, were CoNS, *E. coli*, GBS and *Candida Spp*[10]. In Riyadh at 2000, NS was 21%, reminded CoNS 50%, *E. coli* 29% and others

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GNB 50%[11]. In Tabuk, at 2016, *E. coli* stayed the common[12], in Riyadh at 2016, NS existed 51%, CoNS 35% and *E. coli* 29%[13].

The purposes were existed on "The impact of HA via the bacterial pathogens induced the NS, Taif, KSA", that was blank from the prior revisions, the NS was varies by position, urban, financial, alive type and pathogenic types. The objects of this research were followed up NS in HA area (Taif) to provide the results that might varied from NA areas. The method were followed the philosophy cast-off "Prospective Cohort" was measured: (I) NS suspected patients; (II) Collection Zero Data; (III) Longitudinally Examination; (IV) Answer numerous enquiries; (V) Serving in stable consequences and compact mistakes.

Materials and methods:-

- **Practice Organization:** This study was done over the private hospitals at Taif area, was used agreement strategy[14].
- **Samples Gathering:** All samples data composed from the patients records[15].
- **Microbiology Steps:** The blood samples were processed in BACTEC™ Plus, positive bottle were completed "Ultimate Bacterial Methods for Isolation and Identification"[16-18].
- **Data Analysis:** All results were recorded and analyzed[19].

Results and discussion:-

*Table 1 and graph 1:- The mean incidence of microbial *NS*

Item	Positive %	Negative %
*%	13.1%	86.9%

**NS: Neonatal sepsis, *%: Percent*

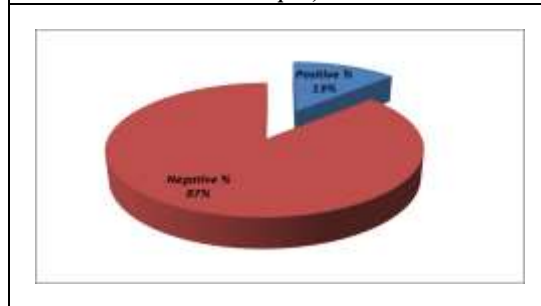


Table 1 and graph 1 showed the mean incidence of microbial NS, the positive NS resulted the mean was about 13.1%, so cleared more than 1/10 from the NS suspected understudy cases and revealed the presence of microbial pathogens. The HA area might be different from NA areas in the positive rate of microbial NS and microbial pathogens[3-4, 11-13].

*Table 2 and graph 2:- The mean incidence of *NS microbial isolates*

Item	*GPB	*GNB	Yeast
*%	14.4%	82.0%	3.6%

**NS: Neonatal sepsis, *%: Percent, *GPB: Gram positive bacteria, *GNB: Gram negative bacteria*

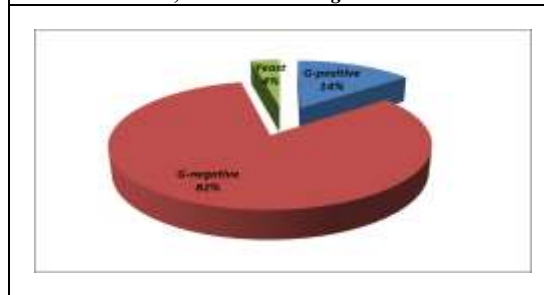


Table 2 and graph 2 showed the mean incidence of NS microbial isolates, it found that the microbial causes of the three types were (GPB, GNB and yeasts). GNB mean recorded the highest as 82.0%, GPB mean decreased

significantly to 14.4%, while the yeasts mean reached to the lowest percentage as 3.6%, respectively. The highest mean incidence of GNB had more than 3/4 of NS understudy cases and had 5.7 times than GPB mean and about 22.8 times than yeast mean. On the other hand GPB mean had more than 1/10 of NS understudy cases and about 4 times than yeast mean. Therefore it found that, the dominant in NS microbial causes were arranged as (GNB, GPB and yeast) by their mean percent results. The mean percent of microbial caused changed in HA area according to the city locations and climate changes[5-6, 11].

Table 3 and graph 3:- The mean incidence of *NS-*GPB isolates

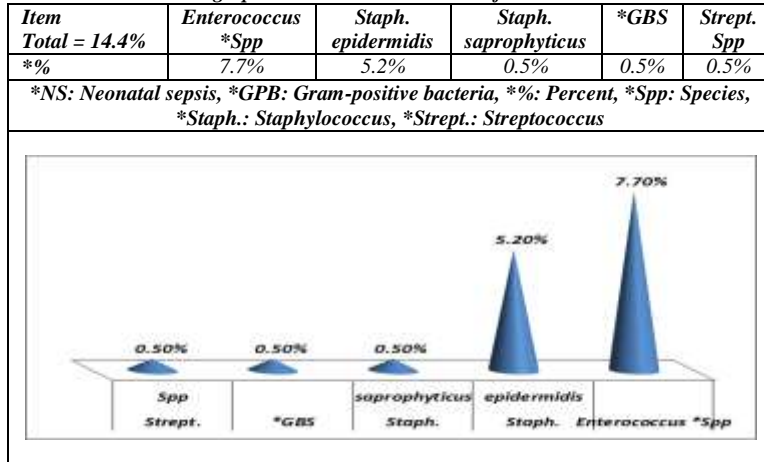


Table 3 and graph 3 showed the mean incidence of NS-GPB isolates, GPB isolates mean were the predominant in ordering of *Enterococcus Spp* 7.7%, *Staph. Epidermidis* 5.2%, then (*Staph. Saprophyticus*, GBS and *Strept. Spp*) gave the same mean percent 0.5%. When compared GPB, found that the first dominant bacterial isolation was *Enterococcus Spp*, then *Staph. Epidermidis*. The first bacteria *Enterococcus Spp* represented 15.4 times than last three GPB isolates, while the second bacteria *Staph. Epidermidis* represented 10.4 times than last three GPB isolates[7, 9, 11, 13].

Table 4 and graph 4:- The mean incidence of *NS-*GNB isolates

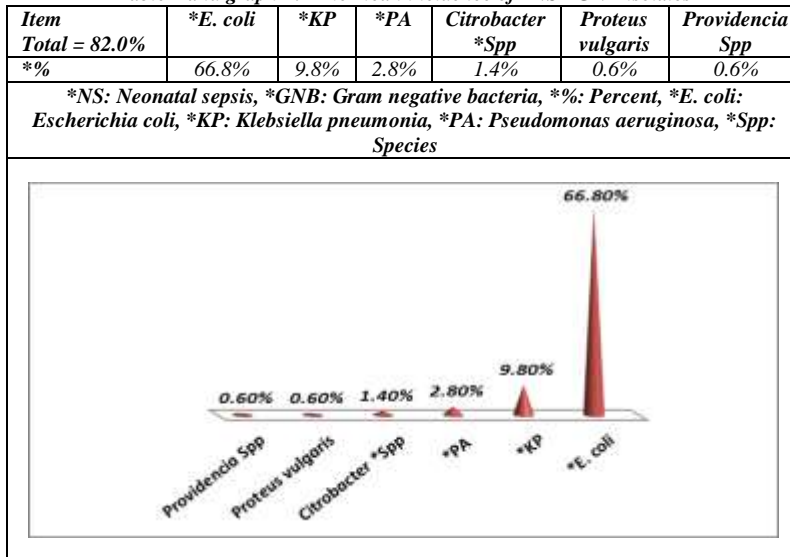


Table 4 and graph 4 showed the mean incidence of NS-GNB isolates, that found to be predominant was (*E. coli* 66.8%, *KP* 9.8%, *PA* 2.8%, *Citrobacter Spp* 1.4%) and the last two GNB (*Proteus vulgaris* and *Providencia Spp*) gave same mean percent 0.6%. The comparison found that GNB caused NS was *E. coli* represented the upper 1/5 and might reach up to 3/4, then followed by *KP* which represented about the 1/10 and then other GNB isolates[1-2, 8, 11-13].

Table 5 and graph 5:- The mean arrangement of *NS bacterial isolates

Bacteria name	*E. coli	*KP	Enterococcus *Spp	*Staph. epidermidis	*PA	Citrobacter Spp	Proteus vulgaris Providencia Spp	Staph. saprophyticus *GBS *Strept. Spp
%	66.8%	9.8%	7.7%	5.2%	2.8%	1.4%	0.6%	0.5%

*NS: Neonatal sepsis, %: Percent, *E. coli: Escherichia coli, *KP: Klebsiella pneumonia, *Spp: Species, *Staph.: Staphylococcus, *PA: Pseudomonas aeruginosa, *GBS: Group B Strept, *Strept.: Streptococcus

Table 5 and graph 5 showed the mean arrangement of NS bacterial isolates, the predominant bacteria were *E. coli* 66.8% about 3/4, *KP* 9.8% about 1/10, *Enterococcus Spp* 7.7% up to 1/10, *Staph. Epidermidis* 5.2% as less than 1/10. The other bacterial isolates were between (2.8-0.5%). The bacterial types were different according to the city location as HA area, which had a several causes to change the NS bacterial types[4-6].

Conclusions:-

The current study found NS was different in HA than NA area, because it depended on causes of HA and climates changes, that factors might lead to NS in higher incidence and cleared from a differences in proportions and types of causing microbial pathogens. Therefore, it was concluded necessary to prove the HA area which had a special health impact on residents and should be investigated by more researches to take proper preventive health measures for HA residents to reduce the NS morbidity and morbidity rates, were in critical ages.

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