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Conclusion of the Main Pathogenic Micro-organisms at High-altitude Area via Follow-up the Laboratory Diagnosis Methods of the Various Specimens, Taif, KSA

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Abstract: *This paper was done for the conclusion of the main pathogenic micro-organisms (PMOs) at high-altitude (HA) area via follow-up the laboratory diagnosis methods of the various specimens (Sps), Taif, KSA. Total Sps were from skin (Sk), wound (W), throat swab (TS), urine (U), high vaginal swab (HVS), seminal fluid (SF), prostatic secretion (PS), urethral secretion (US) and stool (St). Existence of sterile or no growth (NG) and non-sterile or growth (G) of total Sps, NG and G of Sps were (24.1 and 75.9%). The G rates were arranged by the decline percentage as (95.6, 92.2, 91.2, 90.3, 89.6, 87.5, 85.3, 77.4 and 58.4%) from Sps (TS, St, W, PS, US, Sk, HVS, SF and U). Existence of normal flora (NF) and PMOs were isolated from Sps were G, NF and PMOs were (28.9 and 71.1%). PMOs were 100% from (W, U, SF, PS and US), whereas (73.8, 62.6, 24.4 and 9.4%) in Sps of (Sk, HVS, TS and St). Existence of bacteria and fungi were isolated from PMOs, the bacterial and fungi were (85.9 and 14.1%). The more isolates of bacteria from (W, TS, SF, PS and US) as 100%, while from (U, Sk, HVS and St) as (96.1, 85.5, 72.6 and 64.9%). Fungi were isolated as (35.1, 27.4, 14.5 and 3.9%) from (St, HVS, Sk and U) respectively. G equal to 75.9%, from it was 71.1% as PMOs which more than NF as 28.9% which as well near to triple times. PMOs contained bacteria as 85.9% as 6 times of fungi was 14.1%.*

Keywords: *High-Altitude (HA), Pathogenic Micro-organisms (PMOs), Specimens (Sps), Skin (Sk),Wound (W),Throat Swab(TS),Urine(U), High Vaginal Swab (HVS), Seminal Fluid (SF), Prostatic Secretion (PS),Urethral Secretion (US), Stool (St), No Growth (NG), Growth (G), Normal flora (NF).*

1. INTRODUCTION

The effects of HA on humans were considerable, the percentage saturation of haemoglobin (Hb) with oxygen (O_2) determined the content of O_2 in the blood. After the human body reaches around 2.100 meters above sea level, the saturation of oxy-Hb begins to plummet. However, the human body had both short and long-term adaptations to HA that allow it to partially compensate for the lack of O_2. There was a limit to the level of adaptation, mountaineers referred to the HA above 8.000 meters, as the "death zone", where no human body can acclimatize[1]. Infectious diseases at HA considered were of interest recently, some predisposing reasons that assisted in the infection like anemia and hypoxia. Anemia condition that occurred due to the low concentration of Hb and the low number of red blood cells (RBCs), associated with low Hb concentration decreased in the number of RBCs and haematocrit. It caused a drop in Hb of physical damaged to the devices in terms of lack of access to the body systems enough O_2 to tissues and thus a patient complained of symptoms as fatigue and in danger of PMOs, which cause infectious diseases. The present of person in HA area leaded to the high breakdown of RBCs and low tissue O_2, which helped to weakened immunity, such as the declined of cell function and T lymphocyte immunity, particularly against PMOs infection. Recent studies showed changes in the immune system as a result of relief dilution of immune. Decreased functions of cells and white blood cells (WBCs) increased signs of inflammation, which helped PMOs infection. The predisposing reasons helped PMOs infection of person on HA area, the existence of assistance such as hypoxia, anemia, weakened immune system and ultraviolet radiation. PMOs caused diseases of the digestive tract included (*Shigella Spp.*, *Campylobacter Spp.* and *Salmonella typhi*), and in addition to respiratory infection, skin, and insect-borne diseases. Every year, thousands of outdoor trekkers worldwide visited HA (>2.500 meters) destinations. Although HA areas was important to know the PMOs encountered in the mountains to be better able to help the ill at HA. These were the same PMOs prevalent in the surrounding lowlands, but various factors such as anemia, immuno-

modulation, hypoxia, physiological adaptation, and harsh environmental stressors at HA may enhanced susceptibility to PMOs[2]. A multivariate analysis suggested that the rate of hospitalization for RSV specific International Classification of Diseases, (ICD) 9th Revision, Clinical Modification codes increased 25% among 1 year and 53% for (1-4 years) of age for every 1.000 meters increased in HA. The risk for RSV associated hospitalization was highest at elevations above 2.500 meters[3]. School at HA, resulted the mean Hb concentration was 13.4+/-0.9 g/dl, anemia was 11.6% and 15.5% based on Hb and haematocrit values. Under-weight affected 14.2% and stunting affected 12.2%. Moreover, 9.8% of the students were obese and 13.8% suffered from wasting. Most of the victims of anemia and erroneous anthropometric measurements were females, except for wasting which was more prevalent among males[4]. The genetic relatedness of mountain Gorillas and humans had led to concerns about interspecies transmission of infectious PMOs. Tourism, however, also posed a risk for disease transmission from humans to the Gorillas[5]. The most common infections in travelers were gastro-intestinal infections, respiratory and diarrheal illnesses 16% each, while 31% of travelers with fever. Several specific infections that were endemic in this region including brucellosis and relapsing fever[6].

The aim: It was for follow-up the isolation and identification from randomly collected Sps from different lesions at Taif as example of HA area. This work will be revealed the special PMOs can be alive and caused infection at HA area. Isolated PMOs had often helping factors for survive in this area and will be clarify in this paper results.

2. Materials and Methods

Sps collection: The agreements were gotten from Private Lab. Owners, Supervisors and Technicians on a condition without any uses of personal information. The aim was explained to them and this works were under randomly collection of Sps for microbial detection. Working sheets were prepared for each type of Sps, total Sps were (No.=6365), Sps were differentiated according to the type included (Sk, W, TS, U, HVS, SF, PS, US, and St).

Sps microbial detection: The Sps were cultured of each separately on 2 blood agar and fungi patient plates, while that for obtain PMOs included (aerobic, facultative anaerobic, anaerobic and fungi). The isolated PMOs were identified by API 20 A panel (Bio-Meraux sa, France) and confirmed by Micro-scan device[7].

Data Analysis: The data and results were recorded for this work were entered into Microsoft Excel Sheet, then summarized and analyzed in the tables, graphs and diagrams[8].

3. Results and Discussion

Table and Graph1. *Existence of sterile (*NG) and non-sterile (*G) of total *Sps*

Items	Total *Sps *No=6365	*NG *Sps		*G *Sps	
		*No	%	*No	%
*Sk	96	12/96	12.5%	84/96	87.5%
*W	68	6/68	8.8%	62/68	91.2%
*TS	180	8/180	4.4%	172/180	95.6%
*U	2379	990/2379	41.6%	1389/2379	58.4%
*HVS	2790	410/2790	14.7%	2380/2790	85.3%
*SF	266	60/266	22.6%	206/266	77.4%
*PS	113	11/113	9.7%	102/113	90.3%
*US	48	5/48	10.4%	43/48	89.6%
*St	425	33/425	7.8%	392/425	92.2%
Total	**6365**	**1535/6365**	**24.1%**	**4830/6365**	**75.9%**

**NG: No Growth, *G: Growth, *Sps: Specimens, *No: Number, *Sk: Skin, *W: Wound, *TS: Throat Swab, *U: Urine, *HVS: High Vaginal Swab, *SF: Seminal Fluid, *PS: Prostatic Secretion, *US: Urethral Secretion, *St: Stool*

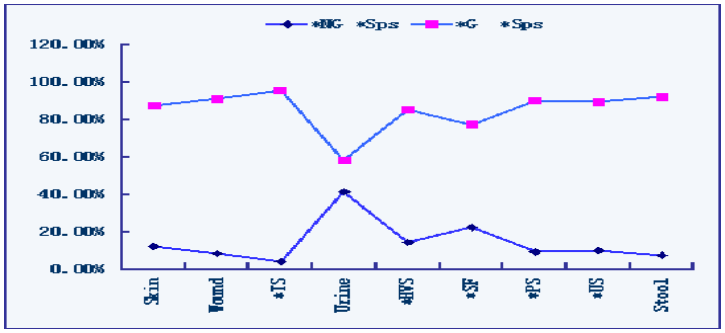


Table and graph 1 showed existence of NG and G of total Sps, total Sps were 6365, NG and G Sps were (24.1 and 75.9%). G Sps were arranged by the decline percentage as (95.6, 92.2, 91.2, 90.3, 89.6, 87.5, 85.3, 77.4 and 58.4%) from (TS, St, W, PS, US, Sk, HVS, SF and U). The results cleared in the high percentage Sps were isolation in TS and were declined till U Sps. The effects of HA on humans were considerable. However, the human body had both short and long-term adaptations to HA that allowed it to partially compensate for the lack of O_2[1]. Infectious diseases at HA considered were of interest recently, some predisposing reasons that assisted in infection like anemia and hypoxia. Caused a drop in Hb level of physical damaged to the devices in terms of lack of access to the body systems enough O_2 to tissues and thus a patient complained of symptoms of fatigue and in danger of PMOs, which caused infectious diseases. The present of person at HA area leaded to the high breakdown of RBCs and low tissue O_2, which helped to weakened immunity, as the declined of cell function and T lymphocyte immunity, particularly against PMOs infection. Decreased the functions of cells and WBCs increased signs of inflammation, which helped PMOs infection. The predisposing reasons helped PMOs infection of person on HA area, the existence of assistance such as hypoxia, anemia, weakened immune system and ultraviolet radiation[2]. A hospitalization increased 25% among 1 year and 53% among children (1-4 years) of age for every 1.000 meters increased in HA. The risk for RSV associated hospitalization was highest at elevations above 2.500 meters[3].

Table and Graph2. *Existence of *NF and *PMOs were isolated from non-sterile *Sps*

Items	*G *Sps *No=4830	*NF		*PMOs	
		*No	%	*No	%
*Sk	84	22/84	26.2%	62/84	73.8%
*W	62			62/62	100%
*TS	172	130/172	75.6%	42/172	24.4%
*U	1389			1389/1389	100%
*HVS	2380	890/2380	37.4%	1490/2380	62.6%
*SF	206			206/206	100%
*PS	102			102/102	100%
*US	43			43/43	100%
*St	392	355/392	90.6%	37/392	9.4%
Total	**4830**	**1397/4830**	**28.9%**	**3433/4830**	**71.1%**

**NF: Normal Flora, *PMOs: Pathogenic Micro-organisms, *G: Growth,*Sps: Specimens, *No: Number, *Sk: Skin, *W: Wound, *TS: Throat Swab,*U: Urine, *HVS: High Vaginal Swab, *SF: Seminal Fluid, *PS: Prostatic Secretion, *US: Urethral Secretion, *St: Stool*

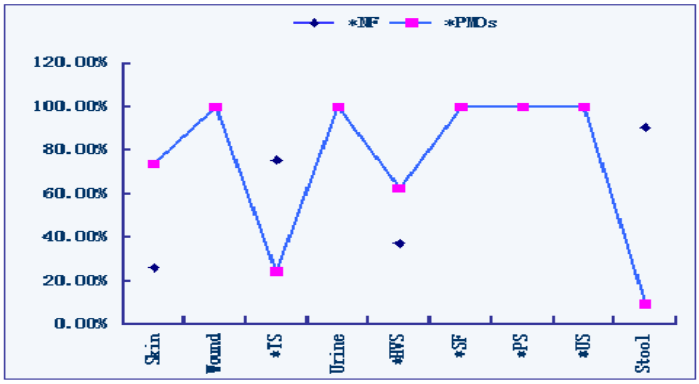


Table and graph 2 showed existence of NF and PMOs were isolated from non-sterile Sps, it was in 4830, this were NF and PMOs as (28.9 and 71.1%). PMOs were 100% in (W, U, SF, PS and US), whereas (73.8, 62.6, 24.4 and 9.4%) in Sps of (Sk, HVS, TS and St) in a decline manner.

Table and graph 3. *Existence of bacteria and fungi were isolated from *PMOs *Sps*

Items	*PMOs *No=3433	Bacteria		Fungi	
		*No	%	*No	%
*Sk	62	53/62	85.5%	9/62	14.5%
*W	62	62/62	100%		
*TS	42	42/42	100%		
*U	1389	1335/1389	96.1%	54/1389	3.9%
*HVS	1490	1082/1490	72.6%	408/1490	27.4%
*SF	206	206/206	100%		
*PS	102	102/102	100%		
*US	43	43/43	100%		
*St	37	24/37	64.9%	13/37	35.1%
Total	**3433**	**2949/3433**	**85.9%**	**484/3433**	**14.1%**

**PMOs: Pathogenic Micro-organisms, *Sps: Specimens, *No: Number, *Sk: Skin, *W: Wound, *TS: Throat Swab, *U: Urine,*HVS: High Vaginal Swab, *SF: Seminal Fluid, *PS: Prostatic Secretion, *US: Urethral Secretion, *St: Stool*

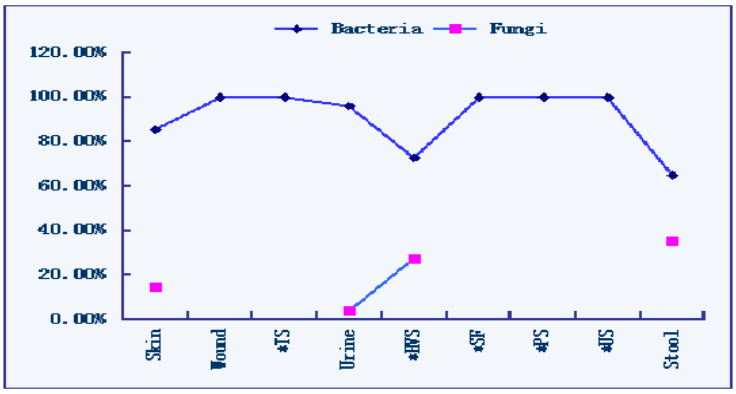
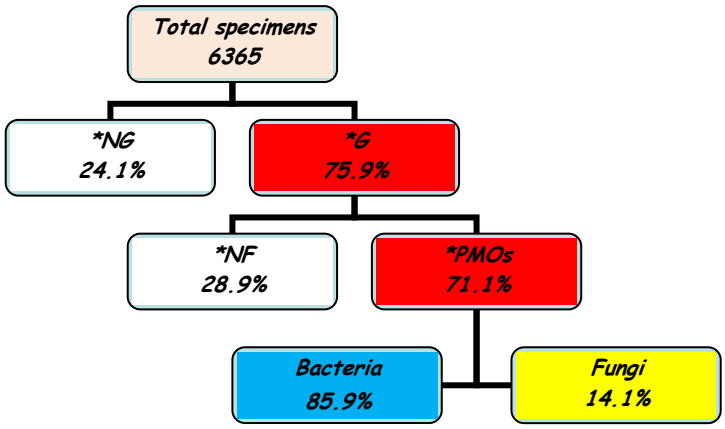


Table and graph 3 showed existence of bacteria and fungi were isolated from PMOs Sps, the bacterial and fungi were (85.9 and 14.1%). The more isolates of bacteria from (W, TS, SF, PS and US) as 100%, while from (U, Sk, HVS and St) were bacterial isolated as (96.1, 85.5, 72.6 and 64.9%). Fungi were isolated as (35.1, 27.4, 14.5 and 3.9%) from (St, HVS, Sk and U) in a decline manner.

Diagram1. *Gross existence of microbial results from specimens were examined*



**NG: No Growth, *G: Growth, *NF: Normal flora, *PMOs: Pathogenic Micro-organisms*

Diagram 1 showed G from total was equal to 75.9%, from it 71.1% was as PMOs which more than NF 28.9% as near to triple times. PMOs contained bacteria as 85.9% as 6 times of fungi was 14.1%. HA caused a drop in Hb level of physical damaged to the devices in terms of lack of access to the body systems enough O_2 to tissues and thus a patient complained of symptoms of fatigue and in danger of PMOs which caused infectious diseases. Decreased the functions of cells and WBCs increased signs of inflammation, which helped to PMOs infection. The predisposing reasons helped PMOs infection of person at HA area, the existence of assistance such as hypoxia, anemia, weakened immune system and ultraviolet radiation. The caused diseases of the digestive tract infections included (*Shigella Spp*., *Campylobacter Spp.* and *Salmonella typhi*), and in addition to respiratory infection, skin, and insect-borne diseases. Although HA areas were important to know the PMOs encountered in the mountains to be better able to help the ill at HA. These were the same PMOs prevalent in the surrounding lowlands, but various factors such as anemia, immuno-modulation, hypoxia, physiological adaptation, and harsh environmental stressors at HA may enhanced susceptibility to these PMOs [2]. The most common infectious diseases in travelers were gastro-intestinal infections, respiratory and diarrheal illnesses 16% each, while 31% of travelers with fever. Several specific infections that were endemic in this region including brucellosis and relapsing fever [6].

4. CONCLUSIONS

The predisposing reasons which helped PMOs infection of human at HA area, as hypoxia, anemia, weakened immune system and ultraviolet radiation. The weakness of immune system were as the decline of cell function and T lymphocyte, particularly against PMOs infection. Decreased the

functions of cells and WBCs will be increased signs of inflammation and helped PMOs to cause infection diseases.

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