Profile of viral skin infections encountered among Albaha King Fahd Hospital attendants: A hospital-based study

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ABSTRACT

Background: Viral infections of the skin are widespread, highly contagious, and often recurring, though the most life-threatening are preventable with vaccinations. The frequently encountered causes for the viral skin diseases are like herpes simplex, herpes zoster
(shingles), warts, and molluscum contagiosum. The present study aimed to describe viral skin infections and to characterise their epidemiology, clinical features and diagnosis, seen at the dermatologist’s clinic tertiary hospital at area of Albaha; Saudi Arabia. **Methodology:** our study was an observational, retrospective cross-sectional study in which archives of records of three years (i.e. January, 2017 to December, 2019) 963 records of referred patients to dermatologist’s clinic of King Fahd Hospital (KFH), Albaha, KSA; were revised to extrapolate clinically diagnosed cases of viral skin diseases over the study period. **Results:** Regarding the type of viral skin lesions, encountered among our study population our study revealed that the viral wart was the most common type (62.6%), followed by herpes zoster (20.8%), Molluscum contagiosum (8.6%), Chickenpox (5.4%) and Herpes simplex (2.6%). **Conclusion:** Further studies are needed to consider in more details the possible causes of the increasing viral disease. Again, it is very important to raise alertness among healthcare providers regarding the importance of completing the patient’s reports.

**Keywords:** Viral skin diseases, dermatology, Albaha, Saudi Arabia

1. INTRODUCTION
Skin diseases are widespread and frequently affect one’s health-related excellence of life, efficiency and emotional health (Wootton et al., 2018; Eckert et al., 2017). Skin disorders ranking as the fourth frequent source of human complaint, however a large number of affected individuals do not seek doctors (LindaTizek et al., 2019), and constitute about 1.79% to the worldwide burden of diseases in 2013 (Karimkhani et al., 2017). Viral infections of the skin are widespread, highly contagious, and often recurring, though the most life-threatening are preventable with vaccinations. The frequently encountered causes for the viral skin diseases like herpes simplex, herpes zoster (shingles), warts, and molluscum contagiosum (Esra Adışen & Meltem Önder, 2015).

In Saudi Arabia, there is scarce information on the profile of viral skin diseases. Most of studies identify the pattern or rate of occurrence of viral skin disorders. In one study in Alkhobar showed that viral infections constitute about (7.9%) of encountered skin diseases , with warts comprised 72.5% a while Chicken pox and herpes genitalis were less frequent among encountered skin disorders (Al Thukair et al., 2017). During our literature search, no data regarding profile of viral skin diseases were found in the area of Albaha, southwestern, Saudi Arabia. Therefore, the objective of our study aimed to describe viral skin infections and to characterise their epidemiology, clinical features and diagnosis, seen at the dermatologist’s clinic tertiary hospital at area of Albaha.

2. PATIENTS AND METHODS
**Study design**
our study was an observational, retrospective cross-sectional study in which we recognised and reviewed health records (archives) of patients seen and clinically diagnosed as cases of viral skin diseases by dermatologist over the study period of three years (i.e. January, 2017 to December, 2019).

**Study area setting**
The study area was dermatologist’s clinic of King Fahd Hospital (KFH), Albaha; KSA, which was a major referral hospital in Albaha. Al Bahah region is located between Makkah and Aseer region as part of the Southwest of the Kingdom of Saudi Arabia with three different environmental areas: Temperate weather and rich plant diversity due to relatively high annual rainfall at High mountainous Sarah region, low land coastal area with very hot and humid weather and very little average rainfall at Eastern Tehama and the cool winters, hot summers, and sparse vegetation cover at Eastern hills. This diversity leads to high occurrence of numerous skin conditions.

**Study Population**
The study population were medical records of referred patients suffering from skin lesions were included (1500 records) at the study period, from which 1050 records of patients with viral skin disorders were retrieved through purposeful random sampling. A total of 963 complete records were included in the study. Patients with incomplete case record form or those transferred to other units from the department of dermatology were excluded.

**Data collection**
Extracted data from the patient’s medical records including socio-demographic (Age, sex, nationality) and clinical (dermatological) and diagnostic data reported on the medical records of 963 patients. The diagnoses were based on features and were confirmed by laboratory tests or histopathological examination, and the International Statistical Classification of Diseases and Related Health
Problems version 10 (ICD 10) was used to classify diseases. A check list to collect these data was used including: age, gender and the type of viral skin disease. The collected data were reviewed, coded, checked, and all statistical calculations were performed using the computer program SPSS (SPSS Inc., Chicago, Illinois, USA) version 24. Descriptive statistics were used to describe the obtained data. Statistical significance was calculated using the chi-square test for comparing groups. A p-value < 0.05 was used as level of significance. Results were then compared with comparable surveys done for same purpose locally, nationally and internationally.

3. RESULTS AND DISCUSSION

During the study period among patients who were examined about 963 records were reviewed. The results were as follow:

Nationality: Saudis constitute the majority of the patients (91 %) while non-Saudi patients were only 9% of the targeted population (Table 1)

<table>
<thead>
<tr>
<th>Nationality of the Patient</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saudi</td>
<td>876</td>
<td>91%</td>
</tr>
<tr>
<td>Non Saudi</td>
<td>89</td>
<td>9%</td>
</tr>
<tr>
<td>Total</td>
<td>763</td>
<td>100%</td>
</tr>
</tbody>
</table>

Sex: regarding sex of the reviewed patient reports as shown in Fig. (1), our study revealed that the frequency of different viral skin disorders was slightly more common among male patients (53.2%) than female patients (46.8%) with statistically no significant difference (p>0.05). This finding is supported by many other studies from Saudi Arabia, (Parthasaradhi & Al Gufai 1998; Bahamdan et al., 1995; Agarwal, 1997). Although other studies shows differently and appealed that female patients be in the majority at dermatology clinics due to their greater sensitivity to skin diseases (Najdawi & Fa’ouri 2002; Al-Zoman et al., 2008; Fawwaz Al Shammrie & Amirah Al Shammrie, 2017)

Age: According to age group, reviewed data (Table-2) showed that almost more than two thirds (70.2%) of the study population were aged below 36 years i.e. with mean age of 27.7±8 years (P-value <0.05). Our finding reveal that most of the viral skin diseases presented at younger age group i.e. less than 36 years this can be claimed to that major disease burdens of viral infections tend to occur with greater frequency around this age.

<table>
<thead>
<tr>
<th>Ages of the Patients</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 18 years</td>
<td>287</td>
<td>29.8%</td>
</tr>
<tr>
<td>18-36 year</td>
<td>389</td>
<td>40.4%</td>
</tr>
<tr>
<td>37-54 year</td>
<td>185</td>
<td>19.2%</td>
</tr>
<tr>
<td>More than 54 year</td>
<td>102</td>
<td>10.6%</td>
</tr>
<tr>
<td>Total</td>
<td>963</td>
<td>100%</td>
</tr>
</tbody>
</table>

Pattern of viral skin diseases
Regarding the type of viral skin lesions encountered among our study population (table 3); it revealed that the viral wart was the most common type (62.6%), followed by herpes zoster (20.8%), Molluscum contagiosum (8.6%), Chicken pox (5.4%) and Herpes simplex (2.6%).

<table>
<thead>
<tr>
<th>Types of viral skin diseases</th>
<th>Diagnosis</th>
<th>Total</th>
<th>Males</th>
<th>Females</th>
</tr>
</thead>
<tbody>
<tr>
<td>Viral wart</td>
<td></td>
<td>603</td>
<td>(53.9%)</td>
<td>(46.1%)</td>
</tr>
<tr>
<td>Herpes zoster (Shingles)</td>
<td></td>
<td>200</td>
<td>(52.9%)</td>
<td>(47.1%)</td>
</tr>
<tr>
<td>Molluscum contagiosum</td>
<td></td>
<td>83</td>
<td>(58.3%)</td>
<td>(41.7%)</td>
</tr>
<tr>
<td>Varicella (chickenpox)</td>
<td></td>
<td>52</td>
<td>(61.5%)</td>
<td>(38.5%)</td>
</tr>
<tr>
<td>Herpes simplex</td>
<td></td>
<td>25</td>
<td>(50.3%)</td>
<td>(49.7%)</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>963</td>
<td>729 (53.2%)</td>
<td>(46.8%)</td>
</tr>
</tbody>
</table>
Our findings here were similar to other studies looking for pattern of skin diseases among Saudi patients, such as survey done from Asir, Abha, Riyadh, AlJouf, Hail, and the Saudi Eastern region (Bahamdan et al., 1995; Raddadi et al., 1999; Al-Zoman et al., 2008; Alakloby, 2005; Parthasaradhi & Al Gufai 1998; Agarwal, 1997).

**Association of diagnosed viral skin diseases and the age of the patients**

Table 4 below revealed that prevalence of viral skin diseases were higher among patients below 37 years of age (61.6%) than those above the age of 37 years (38.4% (p=<0.000).

**Table 4** Prevalence of Skin Infections in relation to the Age of Patients

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Total</th>
<th>Less than 18 years</th>
<th>18-36 years</th>
<th>37-54 years</th>
<th>Above 54 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Viral wart</td>
<td>603</td>
<td>(31.6%)</td>
<td>(45.9%)</td>
<td>(16.8%)</td>
<td>(5.7%)</td>
</tr>
<tr>
<td>Herpes zoster (Shingles)</td>
<td>200</td>
<td>(3.5%)</td>
<td>(35.1%)</td>
<td>(27.1%)</td>
<td>(34.2%)</td>
</tr>
<tr>
<td>Molluscum contagiosum</td>
<td>83</td>
<td>(75%)</td>
<td>(12%)</td>
<td>(9%)</td>
<td>(4%)</td>
</tr>
<tr>
<td>Varicella (chickenpox)</td>
<td>52</td>
<td>(77.0%)</td>
<td>(11.5%)</td>
<td>(11.5%)</td>
<td>(0%)</td>
</tr>
<tr>
<td>Herpes simplex</td>
<td>25</td>
<td>(86.3%)</td>
<td>(4%)</td>
<td>(7.7%)</td>
<td>(2%)</td>
</tr>
</tbody>
</table>

**Figure 1** Common wart (A); Planter wart (B); Plane wart (C)

**Figure 2** Distribution of different types of Viral Warts
Viral wart (Verrucae) is proliferative lesions of squamous epithelial cells that are caused by human papillomavirus (HPV) as shown in figure 1. Among our study group viral warts constitute about two thirds (603; 62.6%), it affect the young adults (mean age 23.5 ±12.5 years) and slightly more prevalent in males (53.9%) than females (46.1%), which is statistically significant (P-value<0.05). Among different types of viral warts, Verruca vulgaris (common warts) was the most prevalent type found in 320 (53.1%) patients, followed by plantar warts in 206 (34.1%), verruca plana in 38 (6.3%), digitate or facial type in 7 (1.2%), and mixed types in 32(5.3%) patients as shown in Fig. (2).

Our findings here were the same as other related studies locally in Saudi Arabia (Parthasaradhi & Al Gufai 1998) and regionally as from Iran (Baghestani et al., 2005), Cairo, Egypt (El-Khateeb et al., 2011), and Nigeria (Henshaw & Olasode, 2015).

**Herpes zoster (shingles):** Infections were encountered as the second most common viral skin diseases among our study group, which represent 20.8% of viral skin infections, it affect adults mainly in the 30th and 40th age (mean age 35.7±12.5 years), minimum occurrence was observed in the age Less than 18 years and more common in males (52.9%) than females (47.1%) (P-value <0.05), (Figure 3).

Herpes zoster (shingles) is more common as the population ages as in our present study we showed that infection with herpes zoster virus was increased with age which is in agreement with other regional (Al-Dahshan et al., 2020), and global data (Lu et al., 2018; Zhu et al., 2015; Marziano et al., 2015). Our study showed that shingles largely affect male in contrast to females, which supports previous studies from Saudia Arabia (Alakloby, 2008), and regional countries as in Qatar (Al-Dahshan et al., 2020), Iran (Babamahmoodi et al., 2015) and Yemen (Al-Shami, 2014).

**Molluscum contagiosum:** In our study group this was found to be less common as only (8.6%) of our study group to have molluscum contagiosum. It mostly affect the young adults (18±11.5 years ages) (P-value<0.05). Molluscum contagiosum is a less common viral skin infection caused by a pox virus that seen predominantly in children. This finding was similar to other local studies as (Alakloby, 2008). But other studies (Al Thukair et al., 2017) revealed that it was more common (Figure 4).
Chicken pox (varicella): chicken pox tends to be less frequent and constitute only (5.4%) among our study group and mostly affect childhood (Table 3). Number of affected males was higher than females (Table 4) (statistically significant P-value<0.05).

Chicken pox (varicella) was reported as childhood infection in the Middle East (Al-Turab & Chehadeh, 2018). Our finding regarding chicken box were the same as many related studies in the region (Yassien & Hasony 2012; Khaleel & Abdelhussein, 2012; Barah, 2012).

Herpes simplex
Herpes simplex viral skin infection was the least common in the prevalence in our study (2.6%) of viral skin infections and commonly seen in childhood and adolescents (77.0%) and both sex affected equally, (statistically significant P-value<0.05).

Herpes simplex is a more frequent among sexually active individuals due to Herpes virus type-6 (HHV-6). Our study shows that herpes simplex infection was a relatively uncommon disease (2.6%) and of childhood age which was similar with other studies (Pinninti & Kimberlin, 2013; Corey & Wald, 2009).

Figure 5 Herpes simplex

4. CONCLUSION
Our study aimed to analyze the epidemiological characteristics of viral skin diseases at Albaha KSA. Our findings revealed that viral skin diseases (infections) were more frequent in Albaha especially among male children and young age groups. Further studies are needed to consider in more details the possible causes of the increasing viral disease. Again, it is very important to raise alertness among healthcare providers regarding the importance of completing the patient’s reports.

Funding
This study received no specific grant from any funding organisation.

Conflict of Interest
The authors declare that they have no conflict of interest.

Informed consent
Informed consent was obtained from all individual participants included in the study.

Ethical approval for study protocol /study design /Methodology
The study was approved by the Medical Ethics Committee of Faculty of Medicine, Albaha University (ethical approval code (REC/MED/BU-FM/2020/030).
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