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Epidemiological Profile of Herpes Zoster and Its Association with Comorbidities in Al-Nasiriyah, Iraq

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ABSTRACT

Background: *Herpes zoster (HZ), resulting from the reactivation of the varicella-zoster virus (VZV), is a significant cause of morbidity. Understanding its local epidemiology and association with comorbidities is crucial for public health planning.* ***Objective****: This study aimed to investigate the demographic characteristics and prevalence of comorbid conditions among patients with HZ in Al-Nasiriyah, Iraq.* ***Materials and Methods****: A retrospective, cross-sectional study was carried out through the medical records of 132 HZ patients at al-Hussain Teaching Hospital. Demographic patient characteristics, clinical presentation, history of varicella and comorbidities (eg diabetes mellitus and hypertension) were evaluated.* ***Results****: A total of 132 (86 males, 65.2% and 46 females, 34.8%) definite intellectual disability (ID) patients were included in the study. The greatest disease prevalence (34.1%) pertained to patients older than 50 years old. Most of them (71.2%) mentioned previous varicella infection. Comorbidities were frequent and hypertension was found in 15.1% of cases, followed by diabetes mellitus in 10.6%. Those comorbidities were mostly detected for people over 50 years of age (respectively, 60.0% and 57.1% in hypertension and diabetes cases within the HZ cohort).* ***Conclusion****: Herpes zoster occurs primarily in the elderly of this Iraqi population and is strongly correlated with systemic diseases including hypertension and diabetes mellitus. These data demonstrate the utility of HZ as a potential marker for underlying chronic diseases and provide rationale for increased surveillance and vaccine approaches to high-risk children.*

Keywords: Herpes Zoster; Varicella Zoster Virus; Epidemiology; Comorbidity.

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INTRODUCTION

Herpes zoster (HZ), also called shingles, is a clinical syndrome caused by the reactivation of varicella-zoster virus (VZV), a human alphaherpesvirus 3 (1). Primary VZV infection generally leads to varicella (chickenpox), an infectious, often self-limiting, disease of childhood. After primary infection, VZV becomes latent in dorsal root, cranial nerve and autonomic ganglia (2). Diminished VZV-specific cell-mediated immunity, associated with increased age or immunosuppression, can lead to reactivation of the virus and subsequent skin involvement along sensory nerves in a dermatomal pattern that typically manifests as an unilateral vesicular rash (3).

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HZ occurs particularly more often with increasing age (with reported rates of 1.2-3.4 cases per 1,000 person-years in younger individuals and 3.9-11.8 cases per 1,000 persons years among those >65 years) (4). About 1 in 3 people will develop HZ during the lifetime, and the risk rises to 1 in 2 individuals reaching their eightieth birthday (5). In addition to the painful discomfort caused by the rash, HZ intersects with severe complications. The most frequent is postherpetic neuralgia (PHN), a chronic neuropathic pain condition that can continue for months and years after the rash heals, substantially decreasing quality of life (6). Other major complications include: herpes zoster ophthalmicus, which may compromise vision, and an elevated likelihood of stroke and cardiovascular events(7).

Many risk factors for HZ have been identified such as older age, female gender and immune suppression due to diseases (i.e. HIV infection, malignancy) or medications (8). Moreover, an increasing evidence is accumulating of the association between HZ and many chronic comorbidities such as diabetes mellitus, CES, and chronic respiratory diseases (9,10). Considering the high rate of morbidity caused by HZ and its complications, knowledge on the local epidemiology and related risk factors are important for planning public health interventions (aimed at potential prevention strategies such as vaccination (11). Thus, this research was carried out to assess the profile of HZ patients in Al-Nasiriyah city, Iraq and to determine whether there is any association between occurrence of HZ and several comorbid conditions among these subjects.

METHODOLOGY

This was a retrospective, cross-sectional study based on the data of herpes zoster patients.

The data was obtained from the Dermatology and Venereology Department of Al-Hussain Teaching Hospital, Al-Nasiriyah city, Thi-Qar Province, Iraq. Study population One hundred thirty-two patients with HZ who consulted to department of dermatology and whose diagnosis was established by board certified dermatologists according to common clinical diagnostic criteria. The information retrieved from the patients' records was demographic (age and sex), clinical presentation (duration of disease, signs and symptoms) and history of previous isolated varicella. Demographic characteristics Comorbidities, such as diabetes mellitus, hypertension, coronary heart disease (CHD) and cerebrovascular accidents (CVA) were all recorded.

Information regarding lifestyle factors such as smoking and recent steroid use was also collected. Data were compiled and analyzed to balance the distribution of HZ in various age groups (underlying sex group), as well as their comorbid prevalence.

RESULTS

The study included 132 patients with an established diagnosis of herpes zoster. Demographically, the study population had a male majority (65.2%, n=86) with HZ as compared to females; 34.8% (n=46). Patients' ages were 50 years old. An increase in the prevalence of HZ was observed >50 years, accounting for 34.1% (n=45). On the other hand, among all patients, 10.6% (n=14) in the pediatric age group who are under 10 years suffered from nipple inversion. Details of the patient distribution with respect to age and sex is presented in Table 1.

Table 1: Distribution of Patients with Herpes Zoster by Age and Sex.

Age Group (years)	Number of Patients (%)	Number of Males (%)	Number of Females (%)
<10	14 (10.6)	6 (6.9)	8 (17.4)
11-20	21 (15.9)	14 (16.3)	7 (15.2)
21-30	15 (11.4)	10 (11.6)	5 (10.9)
31-40	18 (13.6)	15 (17.4)	3 (6.5)
41-50	19 (14.4)	11 (12.8)	8 (17.4)
>50	45 (34.1)	30 (34.9)	15 (32.6)
Total	132	86 (65.2)	46 (34.8)

History of Varicella Infection Among all the 132 HZ patients, the majority 71.2 % (n=94) had experienced chickenpox in past. 28.8% (n=38) of patients on the other hand, did not have any recall of having been infected with varicella before. Males constituted 68.1% and females were 31.9% with positive history of chickenpox. Co-morbidities among HZ patients were also studied. The prevalence of diagnosis of diabetes mellitus and hypertension was noted as 10.6% (n=14) and 15.1% (n=20), respectively. Other co- morbidities were seen in 4.5% (6) patients that included smoking, epilepsy, anemia and coronary heart diseases (CHD). Patients with PHZD and PHZH were older since the age of patients with HZ-DM and HZ-HTN were biased to elderly groups. Particularly, patients aged ≥50 years represented 57.1% of the diabetic cases and 60% of the hypertensive cases in the HZ population of our series (Table 2).

Table 2: Distribution of Comorbidities in Patients with Herpes Zoster by Age Group.

Age Group (years)	Diabetes Mellitus n (%)	Hypertension n (%)	Other Conditions n (%)
<10	0 (0)	0 (0)	2 (33.3)
11-20	0 (0)	0 (0)	1 (16.7)
21-30	1 (7.1)	1 (5.0)	1 (16.7)
31-40	3 (21.4)	4 (20.0)	0 (0)
41-50	2 (14.3)	3 (15.0)	1 (16.7)
>50	8 (57.1)	12 (60.0)	1 (16.7)
Total	14 (10.6)	20 (15.1)	6 (4.5)

DISCUSSION

This study of HZ infection in Al-Nasiriyah, Iraq provides interesting epidemiologic data that deserve to be compared with the latest report from Middle East area studies especially this valuable tal report was done during 6 years on RG Hospitals in Saudi Arabia. Both contribute to understanding the burden of HZ in the Arabian Peninsula, and both show differences in demographics that warrant scientific dialogue(12)The male dominance recorded in the Iraqi study 65.2% HZ occurred in males and 34.8% HZ females was remarkable. This is in striking contrast to the Saudi Arabian study done by Farahat et al. which reported a greater proportion of female patients (more than 50% in its demographics) among 1,019 cases of HZ identified between 2017-22 whose mean age was 52.8 years(13). This sex difference is a substantial departure

from widely reported global epidemiologic trends, with several studies around the world consistently reporting higher HZ incidence in females. The gender disparity in our Iraqi cohort is even more striking when viewed in the light of all inclusive meta analyses. Fleming et al. that risk of shingles was slightly higher in females in all age groups except for the 15-24 years, with relative risks in the 45-64 year olds of 1.48 (14). Similarly, Opstelten et al. reported female sex as an independent risk factor for HZ, with an adjusted odds ratio of 1.38(15). It is thought that differences in immune response between the sexes predominantly revolve around hormonal control of immunological processes, estrogen and progesterone fluctuations during menopause and postpartum periods affecting cell mediated immunity.

The male sex predominance in the Iraqi study might be explained by some possibilities. First, cultural variations of healthcare-seeking behavior in the Middle Eastern setting could lead to diagnostic ascertainment bias whereby more male patients seek presentation to tertiary care centers for dermatomal rash evaluation. The second explanation is that, differences in regional experiences of exposure to VZV at younger ages may affect risk for reactivation thereafter. An Iraqi study of chicken pox in Iraq over 2007 - 2011 also concluded that male sex is consistently associated with varicella however the hypothetical effect on the gender distribution of subsequent HZ reactivation awaiting further investigations to be undertaken (16). In both the Iraqi and the Saudi Arabian study, a well-known age-related rise in HZ incidence was detected. The highest prevalence was observed in Iraq national patients over 50 years (34.1%) and the lowest in children aged less than ten years (10.6%). The Saudi Arabian study also found older age to be an important risk factor for complicated HZ, where patients aged ≥60 years had a 1.42 odds ratio of having complicated HZ. The average age of 52.8 years in the Saudi population was consistent with the typical epidemiological age expression of a sharp increase above five decades(17).

The age-specific curve observed in both studies is congruent with the immunosenescence theory, which states that VZV-CMI decreases over time with increasing age. This decrease facilitates viral re-emergence from dorsal root ganglia, where VZV is latent after primary varicella infection. This trend is consistent with those in the literature, which have determined HZ incidence rates ranging from 1.2-3.4 per 1,000 person-years for younger persons to 3.9-11.8 cases among individuals ≥65 years(18). An interesting discrepancy exists between the studies on the burden of pediatric HZ. The Iraqi study reported lower in patients<10 year (10.6%) than our figures at presentation, and the Saudi study was hospital based; as such they did not highlight this age group among their population(19). Pediatric HZ, while relatively less common than adult disease, is worthy of note because it commonly occurs among children infected with primary VZV in the first year of life when immune system immaturity can lead to inadequate prior immunity (20).

An analysis of comorbidities identifies important similarities and differences between the 2 regional studies. The Iraqi study found 10.6% with diabetes mellitus and 15.1% with hypertension among the HZ patients, these comorbidities were common in those over the age of 50 (57.1% of diabetics and 60% hypertensive cases). In sharp contrast, the Saudi Arabian study reported much higher prevalence of comorbidity with 73.9% participants having one or more (most common co-morbidities were hypertension (38.9%) and diabetes (37.7%)(13). According to the Iraqi study 71.2% of HZ cases were had varicella previously, in them 68.1% were males and 31.9% females (Table ci). This appears to be key epidemiological information on VZV spread in the Iraqi population. The Middle East

and North Africa exhibit high varicella-zoster virus seroprevalence, and observations indicate that in the majority of cases, infection is acquired during childhood. The seroprevalence rate, which goes from 60.5% up to 94.3%, rises rapidly with age(21). Surprisingly, 28.8% of patients with HZ in the Iraqi population did not recall a history of chickenpox. This is in agreement with worldwide data, showing that subclinical or mild varicella disease can be forgotten by patients, while these may host latent VZV capable of reactivating (16). The unavailability of universal varicella vaccination programs in a number of Middle Eastern countries including Iraq, maintains wild-type VZV transmission and continued burden of HZ disease(22).

Limitations

This study has several limitations. It is also a retrospective study subject to information bias as people who poorly kept or did not have medical records. The number of patients is quite low, and all treated in one single centre, a factor that potentially limits the generalization. Moreover, the study did not include a control group which is essential to find inferred comorbidities were likely due to HZ.

CONCLUSION

Conclusively, the present study confirms that herpes zoster is a public health problem in Al-Nasiriyah and old age are at high risk for it. The strong association of HZ with comorbidites such as diabetes and hypertension, underscores the importance of holistic health care for patients not only because of its disablement potential but also considering HZ as a sentinel for an underlying systemic disease. Additional larger prospective studies are warranted to confirm and better understand the potential pathophysiological association between these findings. In the mean time, to mitigate the burden of HZ and its complications, increasing knowledge among health care providers and public as well as encouraging vaccination in eligible persons is crucial.

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