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Research Article

Prevalence of Shingles and association of history of chicken pox infection

Savitha MS[1], Prabhusaran N[2*] and Gnanasekaran R[1]

Article Info

Department of Dermatology, Venereology and Leprosy (DVL)[1], and Microbiology[2], Trichy SRM Medical College Hospital and Research Centre (Affiliated to The Tamilnadu Dr. M.G.R. Medical University, Chennai), Tiruchirappalli, India

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***Corresponding author:**
Prabhusaran N
Department of Microbiology, Trichy SRM Medical College Hospital and Research Centre (Affiliated to The Tamilnadu Dr. M.G.R. Medical University, Chennai), Tiruchirappalli, India.
Email: leptoprabhu@gmail.com

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Abstract

Reactivation of varicella zoster virus that is dormant remains in immunity waned individuals leads to Shingles. The symptoms are unlimited and the incidence and clinical complications are underreported in majority of the Indian Health care institutions. While reviewing the literature, the incidence may range from 8 to 10 new cases annually, but actuals is underestimated. Thus this study aimed to analyze the prevalence of shingles and associate with history of chicken pox among the patients suspected with shingles. A total of 125 patients with early signs, common and associated symptoms of shingles were included in this study. Among them 48 (38.4%) were clinically confirmed as shingles, where 58.3% cases belong between 46 and 65 years. Females slightly dominated with 52.1%, where 2 females were unmarried. The observation of lesions were largely found in Thoracic (45.8%) followed by lumbar (16.7%), The history of chicken pox was 95.8% in all shingles cases and overall 94% of suspected cases had history of chicken pox. Predominantly 27 cases had their chicken pox at the age of 6 to 10 years. The burning pain is higher (45.8%) followed by prickling pain (41.7%), the combination of the pain characters were also recorded with least numbers. A special care should be taken by all the chicken pox positive individuals to prevent future shingles. Two doses of vaccination, maintain the strong immune system may prevent the infection and early treatment and prevent the spread of rashes may help the patients to get rid from the infection.

Keywords: Herpes zoster – shingles – chicken pox – prevalence

Introduction

Shingles are the viral reactivation infection where the individuals with history of chickenpox infection get affected. It is a complicated, clinically important and painful infectious disease [1,2]. The varicella zoster virus infection get treated and found dormant in the nerve ends for longer period time, thereby reactivation takes place when immunosuppression due to age, other infections, drugs, malignancy, and more exposure to sunlight [3,4]. Anyone who have the history of chickenpox infection founds lifetime hidden reservoir where it settled in sensory ganglia and further triggered to develop shingles. Many studies revealed this infection may found above the age of 50, but unfortunately, all age groups are also get infected [5,6].

Shingles is non-contagious, cannot spread as shingles, but can transmit and infect others as chickenpox. Direct contact is the transmission mode thereby the blisters were the contagious material that spread chickenpox to others [7,8]. In order to avoid transmission, may the rashes be covered with antiseptic tissues (not tightly), avoid physical contact with the infected persons and frequently washing the hands with high concentrated antiseptics. People who are immune-compromised, immunosuppressed patients, aged above 50, pregnant women, newborn children are having more chance to get chickenpox infection from shingles patients [9]. The postherpetic neuralgia is a commonest complications thereby scarring, ophthalmic complications, secondary bacterial infections and in severe cases encephalitis, pneumonia and stroke (especially facial paralysis) may be observed [10].

Clinically, appearance of rashes – a stripe of blisters in one side the body. This blistering rash accompanied by burning, itching and/or stabbing which develops and resolves within 2 to 4 weeks. Measles like cases, HIV co-infections are quite common in some areas [11,12]. The prevalence of such recurrence to be identified so as to assess the awareness among public and teach them about the importance of vaccination to overcome the infection, complications and its recurrence. Globally, $1/3^{rd}$ of the adults develop shingles in their lifetime, but the relationship between the increasing age that leads to lowering the immunity and reactivation of shingles are biologically unknown, need further research to explore the healthcare information to prevent completely in future [[13,14].

Chronic health conditions like diabetes, respiratory complications, cardiovascular and renal disorders and immune-compromised state are considered as risk factor in developing shingles. Predominantly, shingles disturb the patients to do their regular and official works, hesitate to participate in the social activities and events, severe pain dermatological manifestations made then discomfort. Individuals with shingles have chronic fatigue due to disturbed sleep, anorexia followed by weight loss, psychological problems like anxiety and depression [15,16,17,18,19].

Risk of mortality is very low, but complications are high [20]. Shingles vaccine is considered as the powerful weapon for the prevention of shingles, thereby quality of life get improved and fear about the disease diminishes [1,21,22]. But awareness related to the importance of shingles vaccination among history of chickenpox is scarce and required mass social media awareness to overcome such problems in future. In this paper, we collected the basic and clinical data of the shingles suspected and clinically confirmed cases thereby the history of chickenpox infection identified and awareness about the importance of vaccination revealed.

Materials and Methods

This is a cross sectional observational study, thereby a total of 125 patients suspected with shingles were included. Patients with herpes zoster have pain, itching, pricking or tingling in the area where the rash developed. In general, patients with herpes zoster have rashes in one or

two or more adjacent dermatomes and the rashes are commonly observed in the trunk or facial region. The clinical observations of signs and symptoms of herpes zoster are usually unique blisters and easily differentiated by making the clinical sense of appearance of vesicular rashes and dermatomal pain. If no rashes, then it is very tough to diagnosis of herpes zoster and might be underdiagnose the patients.

The sociodemographic details including age, gender, locality, marital status, economic status, blood group, diet pattern and health seeking behaviours like body mass index, smoking habit and alcohol consumption and comorbid illnesses like diabetic mellitus, respiratory disorders, digestive issues, genito-urinary diseases and psychological disorders including fear, anxiety, continuous crying, societal complex.

Ethical approval was obtained for this study (Ref: 504/ TSRMMCH&RC/ ME-1/ 2024 – IEC No: 049 dated 04.05.2024), and informed consent was obtained from all patients and the protocol was carried out in accordance with proper guidelines and regulations.

Results

In this study, a total of 125 patients with early signs, common and associated symptoms of shingles were included. Among them 48 (38.4%) were clinically confirmed as shingles, where 58.3% cases belong between 46 and 65 years. Females slightly dominated with 52.1%, where 2 females were unmarried. The economic status was evaluated thereby 33 patients were middle class followed by upper class with 13 patients. While assessing the educational status and employment, maximum are graduates (degree holders) and working in both private and government concern respectively. The detailed demographic variables were evaluated and depicted in table 1.

Table 1: Sociodemographic details of clinically confirmed shingles patients

Characteristics	**Patients of shingles n=48(%)**
Age groups (in years)	
15-25	4 (8.3)
26-35	7 (14.6)
36-45	4 (8.3)
46-55	15 (31.2)
56-65	13 (27.1)
66-75	3 (6.3)
76-85	2 (4.2)
Gender	
Male	23 (47.9)
Female	25 (52.1)
Location	
Urban	26 (54.2)
Semiurban	20 (41.6)
Rural	2 (4.2)
Marital status	
Married	46 (95.8)
Unmarried	2 (4.2)
Economical status	
Lower middle	2 (4.2)
Middle	33 (68.7)
Upper middle	13 (27.1)
Education	
Schoolings	10 (20.8)
Diploma	6 (12.5)

Degree	27 (56.3)
Postgraduation	4 (8.3)
Doctorate	1 (2.1)
Employment	
Unemployed	4 (8.3)
Daily wager	7 (14.6)
Private job	14 (29.2)
Government job	16 (33.3)
Retired	7 (14.6)
Blood group	
A	34 (70.8)
B	8 (16.7)
AB	5 (10.4)
O	1 (2.1)

The associated factors related to shingles were analyzed thereby out of 125 suspected cases included, 117 (93.6%) had past history of chickenpox infection. Among the clinically confirmed shingles patients, 46 (95.8%) had the history of chickenpox; 44 (95.7%) patients has one time of infection and 2 (4.3%) patients informed they were infected twice in their lifetime. The chickenpox infection was found maximum in between 6 and 10 years (56.5%). In order to analyze the seasonal observation, summer showed maximum cases (77.1%). The symptoms were recorded maximum (79.2%) in a week before than recent that indicated that the patients were not visit hospital to diagnose earlier (Table 2).

Table 2: Associated factors of shingles patients

Associated Factors	Patients of shingles
Past history of chickenpox n=48(%)	
Yes	46
No	2
At what age? (in years) (n=46)	
↓3	3 (6.5)
3-5	6 (13)
6-10	26 (56.5)
11-15	10 (21.8)
↑15	1 (2.2)
Recurrence status (n=46)	
One time	44 (95.7)
Two times	2 (4.3)
Seasonal observation (n=48)	
Spring	6 (12.5)
Summer	37 (77.1)
Autumn	2 (4.2)
Winter	3 (6.2)
When patients observed the symptoms?	
A week before	38 (79.2)
4 days before	2 (4.2)
3 days before	3 (6.2)
One day before	4 (8.3)
Today	1 (2.1)
Reason for delay in hospital visit (n=43)	
Feel heat rashes	41 (95.3)

No pain or itching	36 (83.7)
Treat in home	14 (32.6)
Try drugs from over the counter	17 (39.5)
Fear to visit hospital	29 (67.4)
Unawareness	43 (100)
No one guide	40 (93)

The history of chicken pox was 95.8% in all shingles cases and overall 94% of suspected cases had history of chicken pox. Predominantly 27 cases had their chicken pox at the age of 6 to 10 years. The triggering factors like body mass index, smoking, alcohol, diet pattern, exposure to sunlight, family history of shingles, recent contact tracing of chickenpox were analyzed and interpreted (Table 3).

Table 3: Triggering factors of shingles patients

Triggering Factors	Patients of shingles n=48(%)
Contact with chickenpox patients	
Yes	12 (25)
No	34 (70.8)
Donot know	2 (4.2)
Family history of shingles	
Yes	29 (60.4)
No	19 (39.6)
Contact with shingles patients	
Yes	11 (22.9)
No	37 (77.1)
To whom they contact? (n-11)	
Parents	4 (36.4)
Siblings	2 (18.2)
Spouse	1 (9.1)
Children	1 (9.1)
Grand parents	2 (18.2)
Close relatives	2 (18.2)
Non-blood relatives	3 (27.3)
Neighbours	3 (27.3)
Body mass index	
<21	3 (6.3)
21-25	3 (6.3)
26-30	10 (20.8)
31-35	10 (20.8)
>36	22 45.8
Smoking habit	
Yes	24 (50)
No	24 (50)
Yes, Rare	4
Yes, Recent start	4
Alcoholic	
Yes	12 (25)
No	36 (75)
Diet pattern	
Vegetarian	4 (8.3)

Become vegetarian after chickenpox	2 (4.2)
Non-vegetarian	42 (87.5)
Exposure to sunlight	
Not much	7 (14.6)
Rare	10 (20.8)
Frequently	31 (64.6)
Frequent drug users without prescription	
Yes	42 (87.5)
No	6 (12.5)

Clinical investigations were done thereby maximum patients showed mid stage (60.4%). The observation of lesions were largely found in Thoracic (45.8%) followed by lumbar (16.7%), The early stage rashes which are observed as smaller rash bumps with less depth (16.7%), mid stage rashes as larger rash with fluid filled bumps (60.4%) and late stage with blisters of crushed over (22.9%). The burning pain is higher (45.8%) followed by prickling pain (41.7%), the combination of the pain characters were also recorded with least numbers (Table 4).

Table 4: Clinical observations of Shingles patients

Clinical symptoms	Patients of shingles n=48(%)
Location of rashes	
Cervical	7 (14.6)
Cervico-thoracic	1 (2.1)
Cranial	5 (10.4)
Lumbar	8 (16.7)
Neck	1 (2.1)
Sacral	4 (8.3)
Thoracic	22 (45.8)
Rashes description	
Early stage (1-5 days)	8 (16.7)
Mild stage (5-7 days)	29 (60.4)
Severe stage (7-10 days)	11 (22.9)
Pain characters	
Burning pain	22 (45.8)
Pricking pain	20 (41.7)
Burning and pricking pain	1 (2.1)
Itching and pricking pain	3 (6.2)
Burning, itching and pricking pain	1 (2.1)
Itching and pricking Throbbing pain	1 (2.1)
Pain intensity	
Mild	4 (8.3)
Moderate	6 (12.5)
Severe	38 (79.2)
Tolerable	9 (18.7)
Intolerable	39 (81.3)

Discussion

The infectious and complications risk of developing shingles is higher when the age increased. In this study, nearly half of the shingles patients are in adults age 45 or older (68.7%). The chance of developing shingles becomes much

greater by older age who had the history of chickenpox infection and where immunity diminishing [23,24,25]. The reference highly determining the global incidence of shingles found in older adults aged 65. In many studies, no significant correlation found in the location of the residence, but in this study meagre number of patients were having shingles from rural population than urban [24,26].

In common many studies highlighted the older age people are more susceptible to shingles; but some studies described pediatric age group also having such infections [27,28]. Gender specificity is not much found in many studies; but slight higher cases observed among female population [29,30]. Another study revealed that the female gender is the independent factor for the recurrence of shingles [31].

Studies suggested the seasonal variation changing the dermatome pattern of shingles and recurrence [32], in this study also during summer season, more cases recorded. People working and living in cool places or home or office, not much exposed to sunlight are less infected than high exposures [33]. No relationship studies documented related to ABO blood group and shingles infection, but a study revealed blood group A would have higher risk than other groups for chickenpox [34]. By keeping the same principle, this study observed the blood group among the shingles patients, thereby blood group A dominated with 70.8%.

No positive correlation observed while evaluating the marital status of the patients; but shingles infected spouse can transmit the chickenpox to their healthy souse, further shingles developed [13]. All the patients included in this study had the history of chickenpox infection and the same was studied in various parts of the world [11,12,14]. The development and recurrence of shingles are found common among 20% among the history of chickenpox infection [15,19]. Patients with shingles may have the recurrence of shingles again in their lifetime [16,17,18].

Shingles cannot be spread from infection to healthy; but the blisters of infected patients can transmit chickenpox to the healthy one may in future cause shingles [1,22]. In our study, higher BMI is closely associated with the severity of the shingles infection, but in a study from Japan showed overweight was associated with lower incidence of shingles [21]. Another study highlighted that there is no correlation between BMI and shingles but severity of postherpetic neuralgia is high [35]. Patients with high BMI are considered as higher risk of shingles, further reducing the weight and maintaining the BMI is very much useful for early recovery and further complications [36].

Smoking habit was contrariwise linked with the incidence of shingles among older patients [37]. Alcohol intake may cause immunosuppression state thereby shingles may developed among chickenpox infected patients [38,39]. The clinical diagnosis of shingles varied with blisters and pain that are being the primary symptom that to be recorded [40,41]. In controversy, the late and severe appearance of a blister like rashes or sometimes no blister can considered as misdiagnosis, resulting in irrelevant examinations and inappropriate treatments which increased physical, psychological and financial burden on patients [42,43].

The symptoms of shingles can be lasting for weeks to months and the clinical complications are common, 10–18% of patients exhibit postherpetic neuralgia [44]. Education and awareness related to shingles should be placed in all reception of healthcare institutions and hospitals in local languages so as to geriatric patients and the supporters get aware and take necessary prevention. Health related resources have to be owed exactly and targeted local and institutional strategies formulated for strengthening awareness, education, house-to-house pamphlets, organizing specialized season based camps and encouraging for vaccination.

Conclusion

Shingles are found risk at the age of 50 and above; those who are having the history of chickenpox are more prone to developing shingles and it may pose significant health burden in both physical, physiological and psychological debilitation. Maintaining the good BMI, avoiding smoking and alcohol, eating protein and micronutrients rich diet, healthy daily practices and vaccination prevent shingles in our lifetime, further the quality of the geriatric life improved and may live happily without dependence.

Declarations

Ethics approval

Ethical approval was obtained from the Institutional Ethics Committee of Trichy SRM Medical College Hospital and Research Centre (Ref: 504/TSRMMCH&RC/ME-1/2024; IEC No. 049 dated 04.05.2024). The study protocol was conducted in accordance with applicable ethical guidelines and regulations.

Informed consent

Informed consent was obtained from all patients before their participation in the study.

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Conflict of interest

The authors declare that they have no conflict of interest.

Data availability

The data generated and/or analyzed during the present study are available from the corresponding author on reasonable request, subject to applicable ethical and institutional restrictions.

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Use of artificial intelligence

The authors declare that no generative artificial intelligence (AI) tools were used in the conception, conduct, analysis, interpretation, or writing of this manuscript.

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