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Survey and outbreak of chicken pox; acknowledgement by med-student

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Abstract. Background and Aims : In this article learn about survey and outbreak of chicken pox and late complication of VZV-Infection which results the inflammation of Geniculate - Ganglion; cranial nerve -7 The only reservoir for Varicella or Herpes Zoster are humans Chicken pox is more contagious disease having an infection rate of 90-92% among humans i e, suspicion with the seronegative individual person Both sexes males as well as females and all among them are get infection with this virus The purpose of the following article review was to analyze the current knowledge on the study of recently diagnosed Ramsay Hunt Syndrome The study will cover research on previous patient diagnosed by the syndrome as well as the strategies for the prognosis of the virus Methods : All relevant English language review articles and recommendation on Survey And Outbreak Of Chicken Pox were searched in Pub-Med, Scopus, Google-Scholar and Medline Databases These are the following keywords used to searched for the relevant literature, and the data analysis on Survey And Outbreak Of Chicken Pox virus: "Chicken Pox", "Viral-Infection", "Varicella-Zoster-Virus", "Herpes-Virus", "Ramsay Hunt Syndrome", "Shingles", "Herpes Zoster Oticus" The article addressed instructional methods, influencing factors, therapeutic approaches for an individual with recently diagnosed chicken pox patient's with the virus or with Ramsay-Hunt (RH) Syndrome, were analyzed and evaluated Result and Conclusion: The article review will concentrate on the prevention and prophylaxis of chicken pox virus and the better understanding of this as well Also, the following article review will focus on the prognosis of Ramsay Hunt Syndrome, before getting more severe damage of the nerve. The concentrations and recommendations on the outlook may improve the competence of the information provided by the medical health-care professionals to an Infected Individual.

Keywords: *Chicken Pox, viral-infection, varicella-zoster-virus, Herpes-Zoster, Ramsay-hunt-syndrome, shingles, Herpes-oster-oticus.*

Introduction

The Varicella virus is worldwide among the population at a large scale Thus it becomes more epidemic infection among the susceptible person during different seasonal peaks of environment i e, at the end (late) winter season or in an early spring season in the particular temperate zone

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environment Most common Complication of Shingles is post- herpetic neuralgia

Varicella-zoster-virus VZV belongs to the family of herpes Virus It is highly contagious viral disease It primarily transmit by person to person via Respiratory-Route by the inhalation of Aerosols from the vesicular fluid of the skin leisons of vericella or herpes zoster It can also be spread by direct contact with the fluid of skin leisons as well as by droplet transmission by respiratory tract Focusing on the Epidemiology of VZV or herpes-zoster, it is endemic worldwide, can be founf mostly everywhere in every city, state and region of different countries if we talk about the clinical presentation, it is mild in children and most of them recover without serious complication of VZV The average period of incubation is between 14-16 days VZV or herpes often characterized by a short 1-3 days prodormal period by fever or malaise as well as fatigue sometimes There can be serious complication found most commonly in infants, adults and immunocompromised people Breakthrough varicella is contagious virus, most often in an unvaccinated people

Ramsay Hunt syndrome which also known as HZ Oticus (Herpes-zoster-oticus), it considered as the late complication; that results in an inflammation of geniculate ganglion of cranial nerve-7 RH syndrome is described as an otalgia, auditory canal, facial paralysis as well vesicles of ear include as triad If there is a delay in the diagnosis it can lead to long term and an increase incidence complication

Pathogenesis:

If we talk about the pathogenesity, then VZ Virus mainly infects at the mucosal part of the Upper-Respiratory-Tract, and after that it spreads from the blood to skin, where there known typical Vesicular rashes were observed. There is Multi-nucliated giant cell that have the intranuclear-Inclusions which are caught up on the base of the particular lesion. The varicella virus basically infects the sensory neurons which is carried out by Retrograde-Axonal flow in the cells of Dorsal-Root-ganglia, here the VZV become Latent. In the latent stage of an Infected cell, VZ virus DNA is located into the nucleus, and this won't integrate in the cellular DNA. Later, in the later life more frequently during the time, reducing of CMI or it can say during the time of local trauma, the varicella becomes activated and it cause the lesions on the vesicular part of the skin and Nerve pain of varicella zoster. If we talk about the Immunity thenA person can get VZV only

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once lifelong but zoster virus can occur inspite of the immunity to VZ virus. Zoster basically occurs once if we talk about the zoster frequency, it increases with the advancing-age. Thus, its a consequence; wanting immunity.

Subject and methods

Subjects and methods: It has been enrolled the 41 patients, having the suspicion ; BV at 2 pediatric hospitals and performed a real-time

Polymerase-Chain-Reaction i e, PCRon the skin lesions to confirm the BV diagnosis Focusing on the acute phase, diagnosis perfomed with saliva and blood collection samples as well as D-F-A (Direct-Fluorescent-antibody) with the imaging on the leisons including the various measurements of VZV IgG and the IgM during both; acute as well as in convalescent Phase

Diagnosis :

Laboratory methods:

1 enzyme linked immunoassay (ELISA) :

Serum samples were tested for VZV immunoglobulin (Ig) G using an in-house whole-cell enzyme-linked immunoassay (ELISA); samples that yielded negative or equivocal results were retested using the more sensitive glycoprotein ELISA IgG titration was done for patients with both acute- and convalescent-phase venipuncture blood samples, as previously described ; a ≥ 4 -fold increase in titer was considered diagnostic of disease infection For acutephase serum samples with detectable VZV IgG, avidity was tested, is described, to provide supporting information regarding history of varicella disease

cells in 300 μ l of calcium/magnesium-negative PBS and transferred them to flow cytometry tubes We set a threshold for forward scatter (FSC) at 760 and one for side scatter (SSC) at 550, and we collected 5,000 events for each sample

2 polymerase chain reaction (PCR) :

The most sensitive method for confirming a diagnosis of varicella is the use of polymerase chain reaction (PCR) to detect VZV in skin lesions (vesicles, scabs,

maculopapular lesions) Sample can be taken from Vesicular leisons (fluid) or from the scabs, which is best for diagnosing If another sourceslike secretion from nasopharynx, from saliva, or urine, also from washings of bronchiol, and from cerebrospinal fluid, these are less likely that can provide a proper sample and it can lead to false results

Prevention and Prophylaxis :

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- Should not use anything from an Infected person
- One should maintain a distance from an infected person with VZV or Herpes zoster
- Beware of contaminated water, food or any medical equipments in hospital
- VZV infected person should isolate themselves in order to maintain a distance from surrounding people
- Not to share anything with an infected person and should sanitize properly themselves
- Children should be vaccinated with two stage vaccination of Chicken Pox
- An individual who is infected with RH syndrome should start their treatment within 3-5 days of getting symptoms

There are 3 vaccines against VZV : One designed to prevent Varicella, which is also known as varivax. Rest of two designed to prevent zoster, called zostavax and shringrix. Both Varivax and Zostavax mainly contain live, attenuated VZV. But Zostavax is one of the vaccine, used to prevent zoster, which contains 14 times more stronger virus than does varivax. Shringrix is a recombinant vaccine containing the VZV envelope glycoprotein ; E as the Immunogen. The recombinant vaccine is more likely preferred over the live vaccine for the prevention of zoster. The zoster vaccines are more effective in preventing the symptoms of zoster, but it won't eradicate the latent stage of VZV. The Varicella vaccine is highly recommended for children between the ages of 1-12 years group. Whereas the VZV vaccines are highly recommended for the people who are older than the 50 Years age group. It cannot be given to immunocompromised people or pregnant women because this vaccine contains live virus. Varicella-Zoster immune globulin (VZIG), which contains a high titer of antibody to the virus is also used for such prophylaxis. There are several drugs recommended for RH syndrome but it can be treated after getting symptoms if an individual diagnose the symptoms and start for the treatment.

Discussion :

RH syndrome (Ramsay-hunt-syndrome), typical neurological disorder which is rare and it affects mainly adults above 60-62 years of age. The following disorder can be characterized by - rashes that affects the ear and mouth, facial nerve or can be called as facial palsy. Symptoms can be usually seen on the one side of face i.e., unilateral. For most of the people there can be a loss of hearing and can have (facial paralysis) i.e., associated with this syndrome (RH) ; is temporary. Whereas

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this can be permanent sometimes If we take a look on prognosis of RH syndrome then one can get completely better within weeks, if there is less damage of the nerve If we concentrate on the severe damage than it may not recover fully, after few months as well Overall, the chances of getting better or can say recovery, if treatment should start earlier, nearly after or within 3-5 days at begining of symptoms

Number of cases and deaths ; reported by states/union-territory i e,2015 - 2021 :

For the analysis of chickenpox outbreaks, it is observed that the burden of varicella is unevenly distribute among different regions of the country The maximum number of cases was observed in states with the high population living in low and lower-middle socio-states it is also observed that States reporting high cases were also ranked much low in Sustainable Development Goals (SDG)which ranked by NITI Aayog Beware of Indian States, it is observed that in Bihar there is 8413 number of cases were observed and number of deaths are 11, which is the highest After that In Uttar Pradesh, 2640 cases were observed and 7 death as of there are many states that reported caes of VZV but the least cases were observed in Telangana with 13 cases and 0 number of deaths

Result :

If we see the given analysis and observation of the data, according to the data of VZV virus (Chicken Pox), which estimates from the given data of the outbreaks between the year 2015-2021 and the report of 1269 chickenpox outbreaks and there were 27,257 cases observed across the country The GIS based analysis reports that the highest number of cases from states of Bihar, Uttar Pradesh, Jharkhand and Chhattisgarh and the least from Telangana

Conclusion :

The network indicates that a history of VZV or Herpes zoster has been already spread on a high scale among various regions in worldwide Vaccination is more advisable in an infant stage rather than diagnosing the virus after an infection occurs in adolescents or in an elderly aged groups As of that two stages of vaccination is recommended before the latent stage A lack of sensitivities, strategies or specific regarding the proper vaccination and medical health facilities may lead to the infection Therefore proper vaccination is recommended on the time to eradicate or gradually decrease the VZV infection in the individuals.

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References:

- [1] CDC. Updated recommendations for use of VarizIG—United States, 2013. MMWR Morb Mortal Wkly Rep. 2013 Jul 19;62(28):574-6.
- [2] Marin M, Broder KR, Temte JL, Snider DE, Seward JF. Use of combination measles, mumps, rubella, and varicella vaccine: recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR Recomm Rep. 2010 May 7;59(RR-3):1– 12.
- [3] Bialek SR, Perella D, Zhang J, Mascola L, Viner K, Jackson C, et al. Impact of a routine two-dose varicella vaccination program on varicella epidemiology. Pediatrics. 2013 Nov;132(5):e1134- 40.
- [4] American Academy of Pediatrics. Varicella-zoster infections. In: Kimberlin DW, Brady MT, Jackson MA, editors. Red Book: 2018 Report of the Committee on Infectious Diseases. 31st ed. Elk Grove Village, IL: American Academy of Pediatrics; 2018. pp. 869-82.
- [5] The Varicella Vaccination Program in the United States: 25 Years of Saving Lives and Preventing Illness | Journal of Infectious Diseases | November 1, 2022.
- [6] de Ory F. et al. 2006. European seroepidemiology network 2: standardization of assays for seroepidemiology of varicella zoster virus. J. Clin. Virol. 36:111-118.
- [7] Behrman A., Schmid D. S., Crivaro A., and Watson B.. 2003. A cluster of primary varicella cases among healthcare workers with false-positive varicella virus titers. Infect. Control Hosp. Epidemiol. 24:202-206.
- [8] Balfour H. H. Jr. et al. 1988. Laboratory studies of acute varicella and varicella immune status. Diagn. Microbiol. Infect. Dis. 10:149- 158.
- [9] Loparev V, Marto E, Rubtsova E, et al. Toward Universal VaricellaZoster Virus (VZV) Genotyping: Diversity of VZV Strains from France and Spain. Journal of Clinical Microbiology, 2007, 45(2):559- 563.
- [10] Schmader K. Herpes Zoster. Clin Geriatr Med. 2016 Aug;32(3):539-53.
- [11] Freer G, Pistello M. Varicella-zoster virus infection: natural history, clinical manifestations, immunity and current and future vaccination strategies. New Microbiol. 2018 Apr;41(2):95-105.
- [12] Inata K, Miyazaki D, Uotani R, Shimizu D, Miyake A, Shimizu Y, Inoue Y. Effectiveness of real-time PCR for diagnosis and prognosis of varicella-zoster virus keratitis. Jpn J Ophthalmol. 2018 Jul;62(4):425-431.