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CASE REPORT

Pneumonic varicella a in patient with inactive hepatitis B: Case report

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ABSTRACT

Although rarely observed, varicella zoster virus (VZV)-related pneumonia is the most serious complication of the virus, which commonly affects adults and causes high mortality rates. In this study, we describe a case of VZV pneumonia in a 29-year-old male who is an inactive Hepatitis B virus carrier. The patient presented with a 5-day history of fatigue, sore throat, fever, cough and mild dyspnea. He also had an exanthematous vesicular rash. The rash had spread all over his body surface including the hairy skin. But he was not febrile and vital signs were normal. The skin examination exhibited a diffuse polymorphic rash with papules/vesicles, pustules and crusty lesions over the whole body. Serological findings were as follows: VZV IgM positive, VZV IgG positive and HBsAg positive. His chest X-ray showed bilateral pneumonic infiltrations. The patient was prescribed valacyclovir and clarithromycin. The skin lesions disappeared after ten days and the patient made a full recovery. We conclude that an early diagnosis of VZV pneumonia, which rarely occurs in adult patients and its effective treatment with antivirals may prevent the development of serious complications. *J Microbiol Infect Dis 2012; 2(2): 68-71*

Key words: pneumonia, Varicella-zoster virus, hepatitis B virus, adult patient

İnaktif Hepatit B'li bir hastada pnömonik varisella: Olgu sunumu

ÖZET

Nadir rastlanılmasına rağmen varicella zoster virus (VZV) ilişkili pnömoni, virüsün sıklıkla yetişkinleri etkileyen en ciddi komplikasyonudur ve yüksek mortaliteyle seyreder. Bu çalışmada Hepatit B virüs taşıyıcısı 29 yaşında bir erkek hastada VZV pnömonisi tanımlanmaktadır. Hasta beş gündür devam eden halsizlik, boğaz ağrısı, ateş, öksürük ve hafif dispne şikayetleri ile başvurdu. Ayrıca ekzantematöz veziküler döküntüleri vardı. Döküntüler saçlı deriyi de kapsayacak şekilde tüm vücuda yayılmıştı. Fakat hastanın ateşi yoktu ve vital bulgular normaldi. Deri muayenesi ile tüm vücutta papülovezikülllü yaygın polimorfik döküntü ve kabuklu lezyonlar görüldü. Serolojik bulgular, VZV IgM pozitif, VZV IgG pozitif ve HBsAg pozitif idi. Göğüs radyografisinde bilateral pnömonik infiltrasyonlar görüldü. Hastaya valasiklovir ve klaritromisin verildi. Deri lezyonları on gün sonra kayboldu ve hasta tam olarak iyileşti. Sonuç olarak yetişkin hastalarda nadiren oluşan VZV pnömonisinin erken tanısı ve antivirallerle etkin tedavisi ciddi komplikasyonların gelişmesini önleyebilir.

Anahtar kelimeler: Pnömoni, Varicella-zoster virüs, hepatit B virüsü, yetişkin hasta

INTRODUCTION

Varicella zoster virus (VZV) (also known as Human Herpes Virus type 3), is a member of the alpha Herpesviridae subfamily of the Herpesviridae virus family. VZV is the agent that causes varicella (chickenpox) and herpes zoster (shingles). Varicella is an infectious disease prevalent mainly among children in unvaccinated populations, although its incidence among adults is increasing. While chickenpox causes only a mild-to-moderate disease in healthy children, it may cause 25-times more serious complications (central nervous system involvement, pneumonia, secondary bacterial infections, or death) in adults. Varicella pneumonia (VP) is the most commonly occurring complication of the disease in adults. It usually develops insidiously a few days later than the rash and may cause respiratory distress.

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The hepatitis B virus (HBV) is an infectious agent transmitted by parenteral contact; through the perinatal, horizontal or sexual routes, or through blood or bodily fluids. Once the infection turns chronic, it may lead to hepatic insufficiency or cirrhosis.[1] The HBV has been shown to be responsible for 30% of all the cirrhosis cases and for 53% of the hepatocellular cancers (HCC).[2] Chronic hepatitis B carriers are in one of three basic states: 1) Immun tolerant state; 2) Chronic hepatitis B state; and 3) Inactive HBsAg carrier state.[3-4] During the self-limited acute T-cell response, the T-helper (Th) cells and the multi specific cytotoxic response is characterized with a powerful polyclonal response. However, the immune response may not be able to totally eliminate chronic hepatitis B.[5] The relationship between the clinical status of the chronic hepatitis B infection and the host's immune response is still unknown.[6]

In this report, a case of varicella pneumonia diagnosed based on the typical skin lesions, the radiographic findings of the lung, and serologic detection in a patient who is also a hepatitis B carrier, has been presented together with the successful treatment option.

CASE REPORT

A 29-year-old male patient presented with a 5-day history of fatigue, sore throat, fever, cough and mild dyspnea. He also had an exanthematous vesicular rash which had appeared on the next day following the start of the sore throat. When he presented to our hospital with the complaint of persistent fever, he was already receiving cefuroxime for the last 6 days. The rash had spread all over his body including the hairy skin (Figure 1). He did not have any history of varicella, and vaccination against VZV. On physical examination, the patient was observed to be pale but not jaundiced. The vital signs of patient, including body temperature, were normal. During the examination, his respiratory system examination was also found to be normal. The skin examination exhibited a diffuse polymorphic rash with papules/vesicles, pustules and crusty lesions over the whole body.

The patient's laboratory findings were as follows: hemoglobin: 16.6 gr/dL, red blood cell count: 5.6 million/mm^3, white blood cell count: 4,200/mm^3, platelet count: 275.000/mm^3, erythrocyte sedimentation rate: 17 mm/h, C-reactive protein: 1.7 mg/L, AST: 74 U/L, ALT: 145 U/L, VZV IgM: positive, VZV IgG: positive, HBsAg: positive, HBV DNA: negative and anti-HIV (1-2): negative. Although the patient showed no signs of an immune deficiency, his serum sample was subjected to an ELISA test in order to determine the HIV-status and it was found negative. The serum urea, creatinine, bilirubin and electrolyte values were within normal limits. His chest X-Ray showed bilateral pneumonic infiltrations in the mid-zone of his lungs (Figure 2). The diagnosis of varicella pneumonia was made on the basis of the rash, radiography results and the presence of the VZV antibodies. The patient was prescribed valacyclovir and clarithromycin without discriminating between primary and secondary pneumonia. The skin lesions disappeared after ten days and the patient made a full recovery.

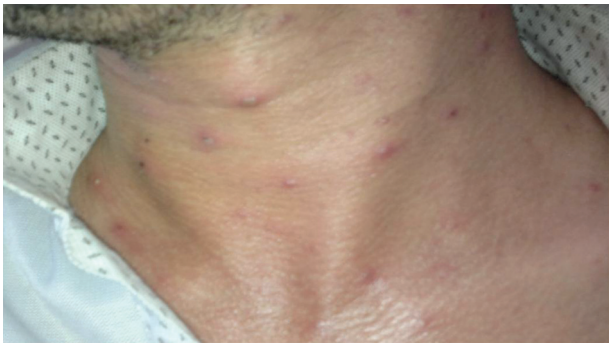

Figure 1. Polymorphic rash with papul, vesicles, pustules, and crusty lesions on the patient's neck

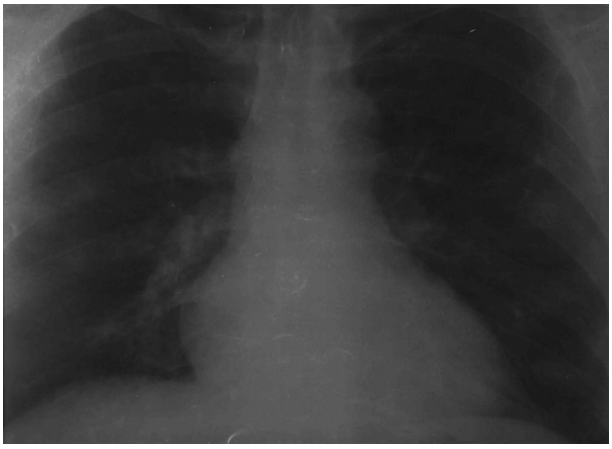

Figure 2. Nodular infiltrations in middle zone of lungs

DISCUSSION

VZV infection leads to two distinct clinical situations: while the primary VZV infection causes the varicella, the reactivation of the virus leads to herpes zoster. Varicella is an infectious disease that occurs in children and has a benign course. Although rarely observed, primary varicella in adults carries a high risk of complications. Pneumonia is one of the common complications among them.[7,8] VP may also develop as a result of the reactivation of the disseminated VZV.[9]

The incidence of VP is estimated as one in every 400 varicella infections.[10] Approximately 90% of the adult patients who develop VP are over 19 years of age and 75% of these cases are in their 3rd to 5th decades.[11] VP is associated with high rates of mortality and morbidity in patients with impaired immune status and in adult and pregnant patients. While the mortality rate varies between 10-30% in the general population, this rate is 40% in pregnant women and 50% in patients with immune deficiency.[8]

The risk factors for VP have been reported as the development of respiratory symptoms, cigarette smoking, more than 100 skin lesions, contact with a chickenpox patient, contact with offspring with chickenpox infection, pregnancy, impaired immune status, chronic lung disease, HIV infection, treatment with immunosuppressive medication and malignancies.[12] In our patient, the risk factor for the development of VP was the skin lesions over 100 in number. Besides, the patient had a chronic hepatitis B infection. According to our literature research, there is no link between the status of a hepatitis B carrier and the development of VP.

Spontaneous resolution of acute hepatitis B and C infections are associated with the adaptive immune response. In chronic hepatitis B and C infections, inhibition of the effector functions and weak proliferation of the hepatitis B virus- and hepatitis C virus-specific CD4, CD8 T-cells occur, which are associated with T-cell depletion, high antigenic load and viral escape. Recent studies have demonstrated that endogenous factors like regulatory T-cells, immunosuppressive cytokines and inhibitor receptors contribute to the degeneration in the immune response of the virus-specific T-cells in chronic infections.[13] Based on these mechanisms, it may be concluded that the immune response degeneration on the cellular level in patients with chronic hepatitis B infection may pave the way to the other viral infections like varicella and the development of serious clinical complications like VP.

VP usually develops within 1-6 days as of the onset of varicella infection. Cough, fever, dispnea, tachypnea, cyanosis and rarely pleuritic chest pain and haemoptysis are symptoms observed in VP. While the physical examination may indicate normal respiratory findings, ronchus and wheezing may also be heard. The lung X-ray may reveal bilateral diffuse or patchy nodular infiltrations usually no larger than 0.5 cm in diameter, which may become more intense or coalesce in the areas towards the hilus. Increase in reticular opacity, pleural effusion and hiler adenopathy may also be observed. At first, nodules measuring 2-5 mm may be better visible in the peripheral areas of the lungs. In progressive disease, these nodules enlarge and coalesce to show a large infiltration. While the radiologic normalization occurs within days in mild cases, it may take up to several weeks in more severe ones.[10,11,14] Our patient had complaints like sore throat, cough, fever, dyspnea and fatigue during the first days and his lung radiography revealed bilateral pneumonic infiltrations in the mid zone of his lungs. However, no pathologies of the respiratory system were detected during the physical examination.

Antiviral agents - primarily acyclovir - are recommended for the treatment of VP. Valacyclovir and famciclovir can be also used in the treatment of varicella.[15] Valacyclovir is the valine ester of acyclovir and its oral bioavailability is approximately 15-75% higher.[10,16] We have also prescribed valacyclovir to our patient and achieved a complete recovery from his pneumonia. When the patient first presented to our clinic, his hepatic function test results were above the normal ranges. As the patient tested positive for HBsAg, he was further tested for the HBV DNA. Since the result of this test turned out negative, the hepatic function test results were attributed to the systemic VZV infection.

In conclusion, our aim with this case report was to underline the importance of an early diagnosis and initiation of the antiviral treatment in the early phases of VP in order to prevent serious complications like respiratory failure and death. We further wanted to emphasize that chronic hepatitis B infection, which is commonly

observed worldwide, may constitute a risk factor for VP through similar mechanisms leading to an immune deficiency.

Conflict of interest: The authors have not declared any conflicts of interest.

REFERENCES

1. Curry MP, Chopra S. Acute Viral Hepatitis. In: Mandell GL, Bennett JE, Dolin R, (eds). Principles and Practice of Infectious Diseases. 7th ed. Philadelphia: Churchill Livingstone; 2010:1577-1592.
2. Perz JF, Armstrong GL, Farrington LA, Hutin YJ, Bell BP. The contribution of hepatitis B and hepatitis C virus infection to cirrhosis and primary liver cancer worldwide. J Hepatol 2006; 45:529-538.
3. Tong MJ, Hsu LY, Chang PW, Blatt LM. Evaluation of current treatment recommendations for chronic hepatitis B: a 2011 update. J Gastroenterol Hepatol 2011; 26:829-835.
4. Rizzetto M, Ciancio A. Chronic HBV-related liver disease. Mol Aspects Med 2008;29:72-84.
5. Jung MC, Pape GR. Immunology of hepatitis B infection. Lancet Infect Dis 2002; 2:43-50.
6. Dengming He, Guohua Yan, Wang Y. Serum levels of interleukin-12 in various clinical states with hepatitis B virus infection. Cell Immunol 2012; 272:162-165.
7. Megged O, Schlesinger Y. Varicella zoster infection in adults: a preventable disease. Isr Med Assoc J 2009; 11:306-307.
8. Monaghan TM, Norton B. Varicella pneumonia in an immunocompromised inflammatory bowel disease patient. Inflamm Bowel Dis 2010;16:364-365.
9. Sato A, Amada N, Kikuchi H, Fukumori T, Haga I, Takahashi Y. Pneumonia due to varicella-zoster virus reinfection in a renal transplant recipient. Transplant Proc 2009;41:3959-3961.
10. Mohsen AH, McKendrick M. Varicella pneumonia in adults. Eur Respir J 2003;21:886-891.
11. Gregorakos L, Myrianthefs P, Markou N, Chroni D, Sakagianni E. Severity of illness and outcome in adult patients with primary varicella pneumonia. Respiration 2002;69:330-334.
12. Tunbridge AJ, Breuer J, Jeffery KJ. Chickenpox in adults-clinical management. J Infect 2008;57:95-102.
13. Rehermann B. Chronic infections with hepatotropic viruses: mechanisms of impairment of cellular immune responses. Semin Liver Dis 2007; 27:152-160.
14. Feldman S. Varicella-zoster virus pneumonitis. Chest 1994; 106 (Suppl 1):22-27.
15. McCrary ML, Severson J, Tyring SK. Varicella zoster virus. J Am Acad Dermatol 1999; 41:1-14.
16. Heininger U, Seward JF. Varicella. Lancet 2006; 368:1365-1376.