The effect of valtrex on T cell subset and IL2, IL6 and IL10 level in patients with herpes zoster

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ARTICLE INFO
Article history:
Received
Received in revised form
Accepted
Available online

Keywords:
Valtrex
Herpes zoster
T cell subset
Interleukin

Abstract
Objective: To explore the effects of valtrex on T cell subset and IL2, IL6 and IL10 level in patients with herpes zoster. Methods: 120 patients with herpes zoster in our hospital were analyzed. The serum T cell subset and IL2, IL6 and IL10 were detected by Western Blotting. Healthy volunteers were enrolled as control group. Results: The CD4+ level was increased significantly while the CD8+ decreased significantly, and the ratio of the two increased too (P all<0.01). The IL6 and IL10 levels were increased significantly (P<0.01). But no significant change in IL2 level was observed. Conclusion: Valtrex is effective on herpes zoster by regulating T cell subset, IL6 and IL10 levels.

1. Introduction

Herpes zoster is a common disease in clinic, and is an acute dermatosis infection caused by chickenpox-herpes zoster virus[1-3]. Patients may have no symptom after infection, and may have chickenpox due to hypoimmunity. Herpes zoster is manifested as lightly weak, low-grade fever, etc. Patients have skin burning sensation, neuralgia, papule, blister and papulovesicle, and feel remarkable sensitivity to pain as being touched[4,5]. Human is the only host of herpes zoster virus. After infection, the virus can be in latent state in cranial nerve or dorsal nerve root ganglia, and is activated after stimulation to result in paroxysm. After healing, patients can get lasting immunity without recurrence. Valaciclovir is a guanine-like antiviral drug, and is usually applied in treatment of herpes simplex and herpes zoster[6,7]. This study aimed to explore the effect of valaciclovir on T cell subsets, IL-2, IL-6, IL-10 of patients with herpes zoster.

2. Materials and methods

2.1. General data

A total of 120 cases with herpes zoster admitted from August 2011 to August 2014 were selected, including 61 males and 59 females, with average age as (40.5±10.3) years old. Some healthy physical examinees were also selected as control group. There was no significant difference in gender, average age, etc (P>0.05).

2.2. Reagents and instruments

T cell subsets in peripheral blood were determined by alkaline phosphatase assay, and the kit was purchased from Military Academy of Medical Science. Interleukin kit was from Jiancheng Bioengineering Insititution, Nanjing.

2.3. Interleukin levels detected by Western Blotting

Total protein in peripheral blood was qualified by Coomassie brilliant blue method. The equivalent protein underwent 10.0% hexadecylsulfonic acid sodium PAGE vertical electrophoresis and film transferring by semidry method. After transferred to nitrocellulose membrane, it was closed by 5% defatted milk for 2 h. Then it was incubated with first antibody for 4 h. It was rinsed with PBS thrice, and was incubated with HRP labeled secondary antibody (1: 200) at room temperature for 1 h. The developing was performed. Optical density was determined by gel imaging analyzer system. β-actin was used as reference to calculate protein expression.
2.4. Statistical analysis

All data were analyzed by SPSS 16.0. Measurable data were analyzed by One-way analysis of variance, and were expressed as mean±SD. Enumeration data were analyzed by Chi-square test. The difference was significant as P<0.05.

3. Results

3.1. Effect of valaciclovir on T cell subsets

It showed that after treatment, CD4+ was significantly increased and CD8+ was significantly decreased (P<0.01), and the ratio was also significantly increased (P<0.01).

3.2. Effect of valaciclovir on IL-6 and IL-10

IL-6 and IL-10 levels of herpes zoster patients were significantly lower than those of control group (P<0.01). The levels were significantly increased after treatment (P<0.01) (Figure 1).

3.3. MCP-1 expression detection

HUVEC cells were stimulated with different strains of Pg fimA genotype at different times (2 h, 6 h and 24 h), and the culture supernatant levels of MCP-1 were shown in Table 1. Supernatant MCP-1 contents of HUVEC cells after Pg stimulation at 2 h, 6 h and 24 h were significantly higher than those in un-stimulation groups (P<0.05), and supernatant MCP-1 contents of HUVEC cells after II fimA and IV fimA genotypes Pg stimulation were significantly higher than those after I fimA genotypes Pg stimulation (P<0.05), respectively. Also, supernatant MCP-1 contents of HUVEC cells after II fimA genotypes Pg stimulation were significantly higher than those after IV fimA genotypes Pg stimulation. These results suggest that Pg with II fimA genotypes show a stronger ability to stimulate HUVEC cells to express MCP-1 than Pg with I fimA genotypes or Pg with IV fimA genotypes.

3.3. Effect of valaciclovir on IL-2

IL-2 level of herpes zoster patients was lower than that of control group (P>0.05). There was no significant change after treatment (P>0.05) (Figure 2).

4. Discussions

The incidence of virosis has been increased year by year, and has
become huge threat to human health. Chickenpox-herpes zoster virus can cause chickenpox and herpes zoster. This virus can only parasitize in human, and can induce two symptoms: chickenpox and herpes zoster. Herpes zoster is characterized as distinctive neuralgia, and seriously affects patients’ health, even endangers human life. Valaciclovir is a nucleoside antiviral drug, and is usually used to treat herpes virus, with confirmed efficacy. We explore the effect of valaciclovir on T cell subsets, IL-2, IL-6 and IL-10, and the result showed that CD4+ is significantly increased while CD8+ is significantly decreased, with significantly increased ratio. Besides, IL-6 and IL-10 levels are significantly increased after treatment, but IL-2 level shows significant change. Therefore, valaciclovir can regulated T cell subsets, IL-6 and IL-10 levels.

Interleukin is produced by various cells, and can act on various cells. It takes part in many pathological and physiological reaction[8-10]. It shows that abnormal interleukin takes part in IL-2 level is decreased without significant difference after treatment of herpes zoster patients are significantly decreased, and IL-10 levels of herpes zoster is significantly decreased, with significantly increased ratio. Besides, IL-6 and IL-10 levels are significantly increased after treatment, therefore, interleukin can be considered to have impact on herpes zoster.

Interleukin is produced by various cells, and can act on various cells. It takes part in many pathological and physiological reaction[8-10]. It is proved that interleukin level is related with viral infection[11]. Analysis of relationship between interleukin 2/10 and serum zinc showed that IL-2 is positively related with serum zinc, but IL-10 has no relationship with zinc[12]. Study on effect of Qingfeiyin on IL-4 and interferon also shows that IL-4 level of infection rats is significantly increased, and Qingfeiyin can decrease IL-4 level to alleviate the damage due to viral infection in lung tissues of rats[13]. It has been also proved that IL-18 and IL-10 are closely related with antiviral treatment for chronic hepatitis C, and interferon can affect IL-4 and interferon also shows that IL-4 level of infection rats is significantly increased, and Qingfeiyin can decrease IL-4 level to alleviate the damage due to viral infection in lung tissues of rats[13].

It is known that abnormal interleukin takes part in treatment of chronic hepatitis C, and interferon can affect immunity via regulating above cytokines[14]. We find that IL-6 and IL-10 levels of herpes zoster patients are significantly decreased, and IL-2 level is decreased without significant difference after treatment of valaciclovir. It shows that abnormal interleukin takes part in treatment of herpes zoster with valaciclovir, and T cell regulator is also related with various viral infections. PD-1 in cell surface of CD4+ and CD8+ in patients with chronic hepatitis C is significantly decreased at the early stage of antiviral treatment. And PD-1 expression is positively related with DNA capacity of HVB[15]. It also proves that DNA copy of HIV-1 provirus is negatively correlated with absolute number of CD4+CD45RA+ T cell. HIV-1 provirus is in relatively stable state after HAART treatment, that is to say, the DNA copy of HIV-1 provirus is the cause for change in number of T cell subset. We also find that after valaciclovir treatment, CD4+ is significantly increased and CD8+ is significantly decreased, with significant high ratio. It indicates that valaciclovir can improve T cell regulator factors to treat herpes zoster.

Therefore, valaciclovir can regulate T cell subsets, IL-6 and IL-10 to treat herpes zoster.

References