

Report on Three Patients with Decline of Cd4 T Cells Unknown Reasons

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Abstract

Aim: To inform three cases with declining of CD4 T-cell with unknown reasons.

Method: The report on clusters of disease cases. 3 patients were treated at the National Hospital for Tropical Diseases in Ha Noi, in the period from 30/04/2013 to 05/13/2013. Three of them had evidence of the counts decline of CD4 T-cell, but the causes were not identified.

Results and conclusion: Three male patients aged from 23 to 40 were engaged in gold mining. All three patients had no history of any special and hospitalized because of fever, cough, difficult breathing from a few days to 2 months. Physical examination and test results showed lung disease with respiratory failure, weakness, oral fungus. T-CD4 of two patients declined, but the results of HIV were negative. Although all of them were treated with intensive, as well as antibiotics, antifungal drugs but the treatment have not resulted. These are the issues that need to be studied further.

Keywords: Immunodeficiency; T-CD4 decline; Idiopathic CD4 T-reduction

Introduction

Immunodeficiency is an abnormal condition of the immune system. In this situation, the patient may decline or loss of immune response to pathogenic microorganisms. The consequences are more susceptible to serious infections and even death [1]. The cause of immunosuppression has proven congenital (primary immunodeficiency) or acquired (secondary immunodeficiency). Immunodeficiency diseases include the reduce number of immune cells, or reduced humoral immune status, or both [1,2]. In addition to the disease congenital immunodeficiency, in the late 20th century, a disease with weakens the immune CD4 T-cells called HIV/AIDS that has been discovered and become pandemic in humans [1,3]. In recent years, another illness that weakens the CD4 T-cells, but not associated with HIV/AIDS are also notified. In this illness, the root cause still has not been proven and considered a rare disease [4,5]

The aim of this report was to inform the three cases with declining of CD4 T-cell with unknown reasons.

Case Study

Subjects

3 patients, who were treated at the National Hospital for Tropical Diseases in Ha Noi, in the period from 30/04/2013 to 05/13/2013. Three of them had evidence of the counts decline of CD4 T-cell, but the causes were not identified.

Method

The report on clusters of disease cases. The three patients with the counts decline of CD4 T-cell were exploited: history of diseases, the drugs used, sexual status, injecting. They also were done HIV test and other tests to determine the causes of infections.

Results

Three patients were male, aged 23 to 40, of different in ethnic groups (Diu, Kinh, Muong), coming from different locations, but all of them had in common is engaged in gold mining, at different locations, before the disease was manifestation. All three patients had no history

of disease in particular, no injections, no sex outside of marriage, and did not use any medical drugs during the time before the disease. All 3 patients were admitted to the hospital because of fever, cough, difficulty breathing during a 20 days to 2 months.

Clinical examination were lung disease with respiratory failure, weakness, mouth fungus. Notably, all of 3 patients had the coworkers, who had the same illness and some of them died.

On lab, two of three patients (H.V.B and B.V.L) has increased the inflammatory index and decline of the number of CD4 T-cell [4,6]. The test for pathogens, 3 patients infected with candidiasis in mouth, the other tests were negative. Only one patient (H.V.B.) had a positive culture with *K.pneumonia*-ASBL (-) in sputum specimen. The imaging results (CXR and CT) of all 3 patients were interstitial pneumonia. Although they were treated with intensive care, but all 3 patients had worse treatment outcomes and withdraw after 3-13 days of treatment (Table 1 and Figures 1 and 2).

Discussion

Three patients presented in this report, 2 patients H.V.B. and B.V.L. had criteria of idiopathic CD4 T-cells lymphocytopenia, patient NVT was not enough this criteria [4,6]. However, when considering the risk, disease progression and occupational, we found that patient N.V.T. also tend leading to the disease, so we collected all 3 of them for a discussion.

All 3 patients were hospitalized with the severe lung disease, respiratory failure. The screening process to find common pathogens which can cause this conditions, in the northern of Vietnam in the current period, were made (Figure 3). The chest X-ray and computerized

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	H.V B.	B.V L.	N.V.T.
Age	26	40	23
Sex	Male	Male	Male
People	San diu	Kinh	Muong
Address	Dong Hy (Thai Nguyen)	Yen Thuy (Hoa Binh)	Kim Boi (Hoa Binh)
Occupation	Farmers; Dig Gold many times, each time for 1 month	Farmers; Dig Gold many times, did 10 years	Farmers; Digging gold for 2 months
Gold mining area	Nghe An and Laos	Son La, Lai Chau	Gia Lai and Campuchia
The coworkers			
• Died	3	0	2
• Trouble breath	3	1	9
History	Normal	Normal	Normal
Injections and sex outside of marriage	No	No	No
Using medical drugs	No	No	No
Reasons for admission	Pneumonia	Cough, fever, shortness of breath 1 months	Cough, fever, shortness of breath 20 days
Disease progression	2 months		
Clinical:			
• Weight loss	12 kg/30 days	20 kg/2 months	16 kg/35 days
• BMI	17	16	16
• Pulse (blood pressure)	144 (110/70)	135 (110/60)	110 (120/70)
• Fever	38°C	(+)	39.5°C
• Respiration			
+ Cough	(+)	(+)	(+)
+ Shortness of breath	(+)	(+)	(+)
+ Exertion Dyspnea	(+/-)	(+)	(+/-)
+ SpO ₂	94% (Oxy mast 10 l/p)	89%(Oxy mast 15 l/p)	92% (Oxy mast)
• Candida tongue, throat	(+)	(-)	(+)
Laboratory			
• Hemoglobin	173 g/l	162 g/l	149 g/l
• Platelets	232 G/l	395 G/l	411 G/l
• White blood cells (neutral)	27.32 (94%)	10.88 (72%)	10.11 (66.7%)
• CRP (mg/L)	252	64	13.5
• Procancitonin (nm/ml)	2.83	0.75	0.185
• CD4 T-Cells	64	220	669
• AST/ALT (U/L)	24/36	34/21	45/41
• CK/CKMB (U/L)	65/41		14/23
• LDH (U/L)	658		729
• HIV Test	(-)	(-)	(-)
• Test of influenza A, B	(-)	(-)	(-)
• PCR Flu	(-)	(-)	(-)
• Specimens culture			
+ Blood	(-)	(-)	(-)
+ Sputum	K.pneumonia, ASBL(-)	(-)	(-)
• Malaria parasites	(-)	(-)	(-)
• Ricketssia	(-)	(-)	(-)
• HBsAg/Anti HCV	(-)	(-)	(-)
• Oral thrush	++	+++	+++
• BK sputum	(-)	(-)	(-)
• Chest X-ray (interstitial pneumonitis)	TB suspected	+	+
• Chest CT (interstitial inflammation)			
• Bronchoscopy and culture	TB suspected	+	+
• Lung biopsy			
• Abdominal ultrasound			(-)
	Splenomegaly, effusion	Normal	Pulmonary fibrosis Normal
Treatment			
• Cephalosporin the third (or tienam)+intracellular antibiotic	+	+	+
• Anti fungal	+	+	+
• Tamiflu	+	+	+
• Anti tuberculosis	+	+	+
• Ventilation	+	+	+
Outcomes			
• Withdrow treatment	+	+	+
• Number of days in hospital	3 days	5 days	13 days

Table 1: An index of demographic, epidemiological, clinical manifestation of 3 cases with the counts decline of CD4 T-cell.

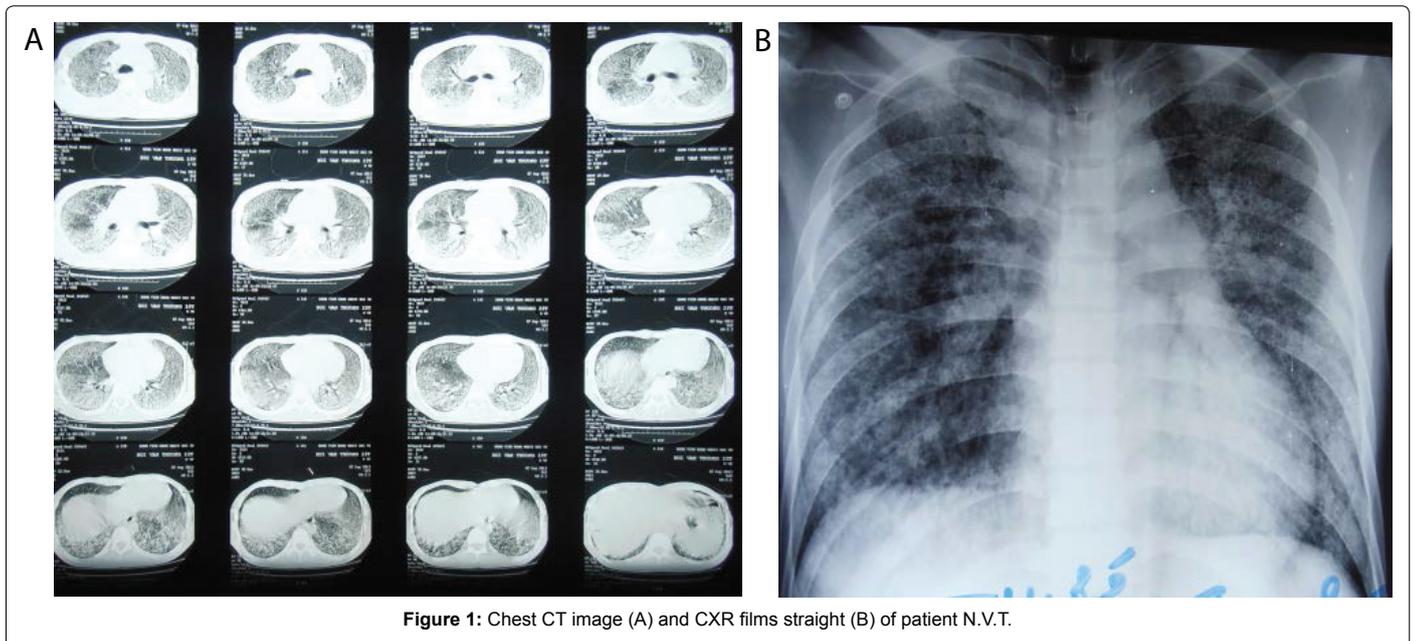


Figure 1: Chest CT image (A) and CXR films straight (B) of patient N.V.T.

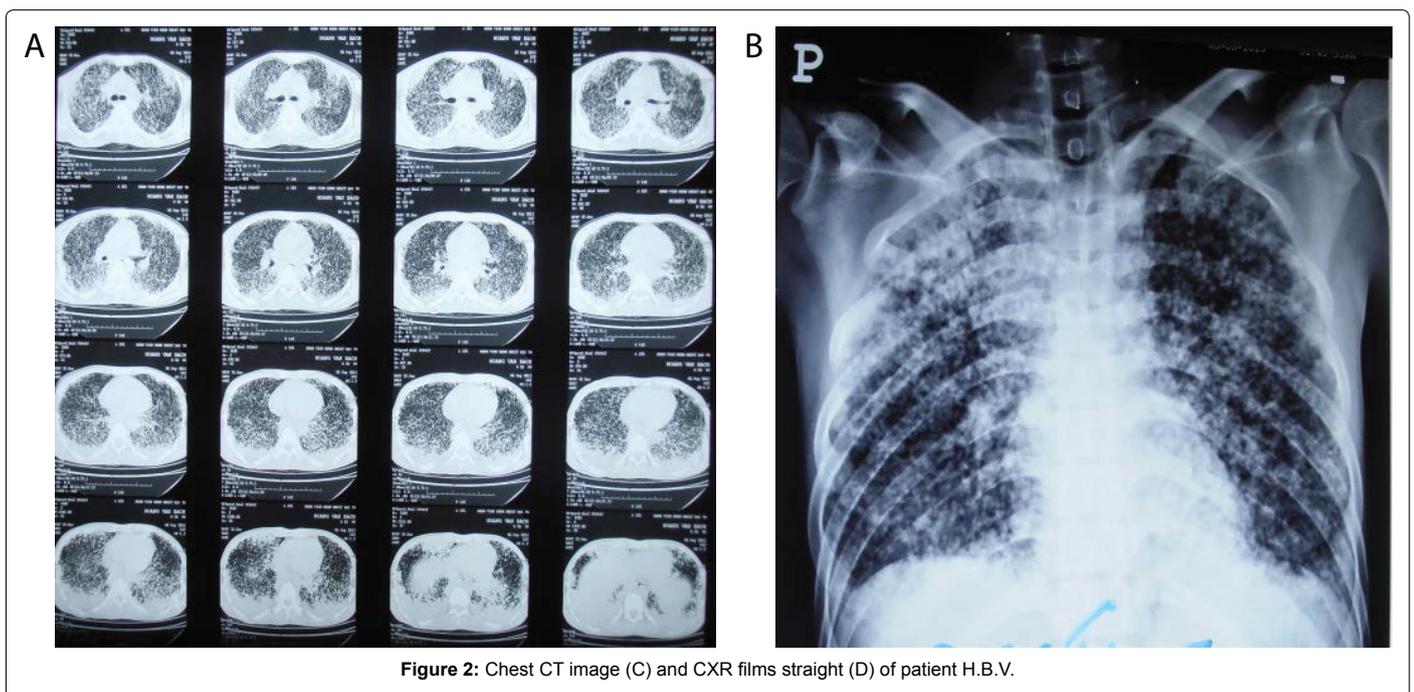
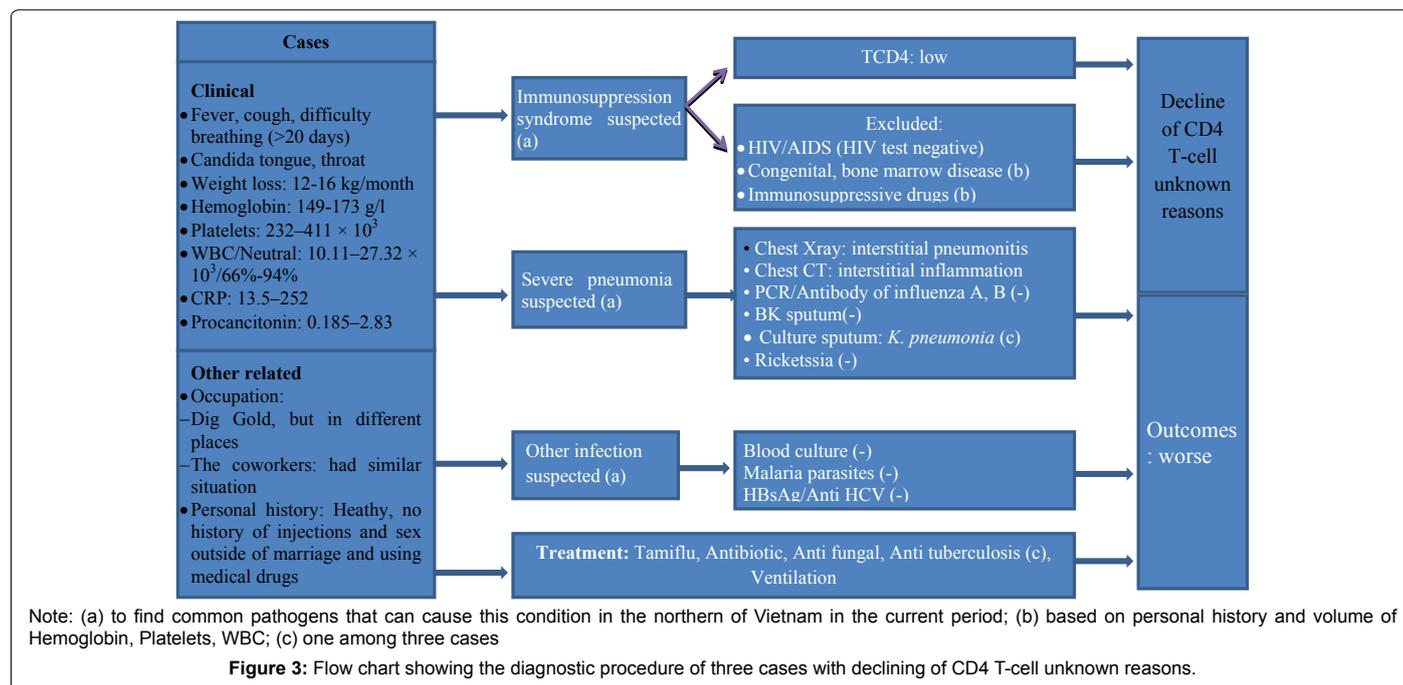


Figure 2: Chest CT image (C) and CXR films straight (D) of patient H.B.V.

tomography showed that were interstitial pneumonia image all 3 patients. Therefore, tests to find the causes of interstitial pneumonia illness, which often occurs in the North of Vietnam during this period, were executed as tuberculosis, rickettsia, malaria, influenza, including bronchoscopy to find fungi. But all of the results were negative. On the other hand, due to the manifestation of infection in clinical, such as fever and increased inflammatory indices (patients B.V.L and H.V.B), even splenomegaly (patient H.V.B), so the other causes of infections also carried out to find. The test eliminate causes of hepatitis virus and assessment of liver function also be done [1]. But the result s of microbial etiologies cultures as well as viral hepatitis in all 3 patients was negative (except patients H.V.B, the result of sputum culture was

positive with *K. pneumonia*). Moreover, in all 3 patients had oral thrush, so the immunodeficiency diseases also be suspected [1,2]. Because of CD4 T-tests showing severe deterioration CD4 T-cells in 2 of the 3 patients, the HIV tests have also been carried out. The results showed that all 3 patients had HIV antibodies negative and they also did not have risk factors, so we eliminate the relation between deterioration CD4 T-cells with HIV infected [3].

In all 3 patients, we excluded the cells immunocompromised disease causing by congenital disease because they were healthy and afford migrant work [2]. We also exclude the possibility that the immunosuppression status associated with the use of immunosuppressive drugs, because of all 3 patients having no history



of medical using of drugs in the past. The bone marrow disease also was excluded, as the number of red blood cells and platelets were in the normal range [2,5]. Other questions were posed, whether the infection status caused the decline of the number of CD4-T or this decline caused infection diseases in these patients? [7].

According to the report and research results in some countries recently, there is status of the Idiopathic CD4+ lymphocytopenia and this status has led to severe infections [4,6-8]. However, the reports showed that the status of deterioration CD4 T-cells was only detected very rare, while in a short period of less than 2 months we received 03 patients with deterioration CD4 T-cells and all of them engaged in gold mining. Will the chemicals used in gold mining which can be the cause of the deterioration CD4 T-cells or not? as one our patient (N.V.T) was done pathology lung biopsy, the result showed pulmonary fibrosis.

Although all of them were treated with intensive care, as well as antibiotics, antifungal drugs but the treatment have not resulted [9]. These are the issues that need to be studied further.

Conclusion

This is the first report on the cases have had evidence of decline of CD4 T-cell disease and severe infection, but the root cause has not been determined, among the gold diggers.

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