

## Elevated D-dimers without Disseminated Intravascular Coagulation in a Patient with Adult Onset Still's Disease: An Indicator for Early Corticosteroid Treatment?

Natalia G Vallianou<sup>\*</sup>, Nikos Schizas<sup>1</sup>, Angeliki Papanicolaou<sup>1</sup>, Michalis Angelakos<sup>2</sup>, George Katsikas<sup>2</sup> and Evangelos Kokkinakis<sup>1</sup>

<sup>1</sup>First Department of Internal Medicine, Evangelismos General Hospital, Athens, Greece

<sup>2</sup>Rheumatology Department, Evangelismos General Hospital, Athens, Greece

**\*Corresponding author:** Natalia G Vallianou, 5 Pyramidon str, 19005, Municipality of Marathonas, Athens, Greece, Tel: +302294092359; E-mail: natalia.vallianou@hotmail.com

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### Abstract

Adult onset Still's disease (AOSD), is an inflammatory disease characterized by fever, arthritis or arthralgias, muscle pain, pharyngitis, lymphadenopathy, rash and splenomegaly. Fever together with arthralgias and myalgias are reported in >90% of patients with AOSD. Disseminated intravascular coagulation is a very rare disorder, which may accompany severe cases of AOSD, especially in the context of hemophagocytic syndrome. Herein, we describe a patient with elevated d-dimers, but without disseminated intravascular coagulation and without hemophagocytic syndrome, who responded well to early corticosteroid treatment. We propose that isolated elevated d-dimers may be associated with the severity of the disease and may be suggestive of the need for early corticosteroid treatment.

**Keywords:** Still's disease; D-dimers; Disseminated intravascular coagulation; Indicator of severity

### Introduction

Adult onset Still's disease (AOSD), is an inflammatory disease characterized by fever, arthritis or arthralgias, muscle pain, pharyngitis, lymphadenopathy, rash and splenomegaly [1]. The clinical course of the disease may rarely be complicated with disseminated intravascular coagulation (DIC), usually in the context of hemophagocytic syndrome. Our patient had extremely elevated d-dimers, but without the hemophagocytic syndrome nor any clinical signs of disseminated intravascular coagulation. D-dimers returned to normal after successful corticosteroid treatment.

### Case Presentation

A fifty-three years old female patient presented to the hospital with high fevers, above 39°C of one week's duration. Also, she complained of a sore throat, cough, myalgias and arthralgias, especially of the large joints. On clinical examination, she had a temperature of 40°C, pharyngitis, myalgias, arthralgias and a salmon-colored rash that extended from the trunk to the extremities. There were no signs of arthritis.

From the laboratory examination the abnormal findings were: white cell blood count: 12.600 cells/mL, Ht: 34.1%, hs-CRP: 30 mg/mL (normal range <0.5 mg/mL), ESR: 112 mm/h, AST: 54 U/L, ALT: 62 U/L, LDH: 502 U/L, serum ferritin: 1848 ng/mL and d-dimers were above 10 µg/mL on two different occasions. Due to the high d-dimers the patient underwent a spiral thoracic CT scan, which was negative for pulmonary embolism, but showed a ground-glass appearance. A venous triplex of the legs, was negative as well for the presence of thrombi. In addition, due to the presence of FUO, a bone biopsy was

made, which did not reveal any pathological findings. The abdominal CT scan showed no abnormal findings. Six blood cultures were negative, while ANA and RF were negative, too. A cardiac ultrasound depicted pericardial effusion of 0.7 cm.

It was noteworthy that the rash became evident only during fever spikes; in other words, it was evanescent. The patient was diagnosed with adult onset Still's disease, as she fulfilled all the Yamaguchi criteria and she was early started on methyl-prednisone 48 mg daily [2]. Defervescence occurred, the patient's cough disappeared and she felt much better. Besides, the CRP levels returned to normal (<1 mg/mL), the hematocrit rose to 39%, the liver function normalized, too and the d-dimers became negative.

### Discussion

Adult onset Still's disease may be associated with interstitial lung disease, as was the case of our patient. Severe pulmonary involvement, such as interstitial pneumoniae in AOSD is related to poor prognosis. Patients may complain of dyspnea, pleuritic pain or cough. Furthermore, severe cases of interstitial pulmonary disease have been reported, some of which have progressed to acute respiratory distress syndrome [3-7]. Apart from that, hematological implications, such as the reactive hemophagocytic syndrome must not be overlooked. The reactive hemophagocytic syndrome in the context of AOSD has also been termed macrophage activation syndrome (MAS). The hallmark of MAS is the presence of well-differentiated macrophages (histiocytes) in the bone marrow specimen [8]. MAS may develop at any time in the history of AOSD, and simultaneous presence of MAS and AOSD are not unusual [9]. As hyperferritinemia does occur in both syndromes and isolated cytopenias may also be present in both syndromes, too, sometimes a bone marrow biopsy is indispensable to distinguish between them.

There are a few reports of disseminated intravascular coagulation (DIC) in AOSD, which were associated with a poor prognosis [10-14]. Regarding our patient, the elevated d-dimers were neither associated with MAS nor with disseminated intravascular coagulation, as the platelets, INR and aPTT were within normal ranges. To our knowledge, this is the first report of AOSD with elevated d-dimers not associated with MAS or DIC, which had a good outcome with early corticosteroids treatment, despite the markedly elevated serum hs-CRP levels. Regarding rheumatic diseases, elevated d-dimers have been associated only with AOSD and the antiphospholipid syndrome, the latter potentially attributed to a thrombotic event [15]. An interesting study by Bloom et al. has demonstrated that persistently elevated d-dimers are related to the severity of the disease as well as to a poor long-term outcome in juvenile idiopathic arthritis [16]. Also, Baxevanos et al. have described four patients with elevated d-dimers and AOSD and have proposed that the finding of elevated d-dimers in AOSD merits further attention [17]. However, they have not correlated this finding with the severity of the disease course. Future research may indicate or not whether isolated elevated d-dimers in AOSD are associated with the severity of the disease or with a poor prognosis.

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