Adult Onset Still’s Disease Complicated by the Acute Respiratory Distress Syndrome

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Adult Onset Still’s Disease

Characterized by high spiking fevers, an evanescent rash, pharyngitis, and hyperferritinemia, Adult onset Still’s disease (AOSD) primarily affects the joints and skin. As many as one in four patients, however, also display pulmonary manifestations of disease. One of the most devastating of these, the acute respiratory distress syndrome (ARDS), is diagnosed when patients develop new or worsening acute hypoxemia within one week of a known clinical insult and display bilateral non-cardiogenic opacities on pulmonary imaging [1]. Diagnosing AOSD in patients presenting with ARDS may be difficult given many shared clinical characteristics and the lack of clear pathognomonic radiographic or laboratory findings. Subsequent delays in the initiation of appropriate immunosuppression may place patients at a higher risk of mortality. Providers should be aware of the potential for ARDS to complicate AOSD, as expedient diagnosis and treatment of the underlying disease process may result in better outcomes.

The reported prevalence of pulmonary complications in AOSD varies. A widely cited retrospective review of 62 patients by Pouchot et al. reported a 53% prevalence of pleuritis and pulmonary effusion [2] but multiple other large case series have reported rates of 4-22% for pleuritis [3-8] 9%-30.5% for pleural effusion [3,9,10] and 3%-15% for interstitial pneumonia [4,6-8]. Though less common, cases of diffuse alveolar haemorrhage, [11] organizing pneumonia [12] and diffuse pulmonary nodules [13] have all been reported. Pulmonary involvement in AOSD is associated with higher rates of relapse and death [4]. Thus, prompt diagnosis of AOSD with pulmonary manifestations is critical in initiating appropriate therapy.

We previously reported a case of AOSD presenting as ARDS and performed a literature review, identifying 18 additional cases [14]. A PubMed search for AOSD and a review of articles that report concurrent cases of ARDS revealed no new cases from January 1st 2012 to January 1st 2016. Patients in our prior series ranged from 17-71 years of age and data was available all met the Yamaguchi criteria for AOSD [15]. Patients initially received antibiotics but developed progressive respiratory failure and required intubation. Once the diagnosis of AOSD was made, antibiotics were discontinued and high dose corticosteroids were initiated. While the majority of patients responded well within hours to days, 4 out of 19 failed treatment and eventually died [14,16-18]. Imaging findings of ARDS in these case reports were described as dense, diffuse, bilateral infiltrates. Unfortunately, these could not be radiographically differentiated from other more common etiologies of ARDS, such as infection, inhalation, or lung contusion [19].

The lack of pathognomonic radiographic findings in AOSD and the overlap of clinical features between AOSD and infection may make timely diagnosis difficult. Diagnostic delays in AOSD are already common, with a median time to diagnosis of 3 months [3]. Moreover, both AOSD and infections share many clinical features, such as fevers and leukocytosis. Other primary features of AOSD are nonspecific, such as rash, lymphadenopathy, and arthralgias. Even hyperferritinemia, a common feature in AOSD, [20] can be found in other conditions such as renal failure, hepatocellular injury, infections, and malignancies [21]. Prompt diagnosis of AOSD presenting with or complicated by ARDS may therefore require a high level of clinical suspicion based on presentation and history. Moving forward, greater use of diagnostic markers with higher specificity for AOSD, such as the glycosylated ferritin, [20] and further development of experimental biomarkers, such as serum S100A8/A9 [22] or calprotectin levels, [23] may improve diagnostic specificity. At a minimum, AOSD should be considered when patients with ARDS also exhibit an evanescent rash or persistent fevers despite appropriate antimicrobial coverage.

Expedient diagnosis of AOSD presenting as ARDS may be especially important, as the shift from antimicrobial therapy to immunosuppression may improve outcomes. In our review of prior cases, ferritin levels and clinical status improved after treatment with methylprednisolone [14]. Though corticosteroids remain the first line agents for AOSD, case series of patients receiving biologic therapies have been promising [24]. In particular, biologics targeting IL-1, such as anakinra, canakinumab, and rilonacept, have been recommended as first line therapy for patients who fail corticosteroids [24-26]. These agents have a faster onset of action than TNF agents or methotrexate and may be more efficacious, though head to head trials have not been performed [25]. Even in cases of ARDS, where patients are often critically ill, there may be an emerging role for anakinra. In three recent case reports, patients presented with pulmonary disease and decompensated shortly thereafter, with two requiring vasopressors and all three requiring mechanical intubation. All three patients were subsequently diagnosed with AOSD and received anakinra, either after failing conventional therapy or in conjunction with corticosteroids, and all three recovered rapidly [27-29].

In addition to the macrophage activation syndrome, disseminated intravascular coagulopathy, thrombotic thrombocytopenic purpura, and pulmonary arterial hypertension, ARDS represents a life threatening complication of AOSD [30]. Though it remains a rare manifestation, patients with AOSD complicated by ARDS require prompt diagnosis and immunosuppressive treatment. This can be difficult given the lack of pathognomonic features; clinicians should consider AOSD when patients with ARDS develop persistent fevers or an evanescent rash. As novel diagnostic biomarkers and fast acting
targeted therapies become available, patients afflicted with AOSD could experience a welcome decline in treatment delay and associated morbidity.

References

1. ARDS Definition Task Force, Ranieri VM, Rubenfeld GD, Thompson BT, Ferguson ND, et al. (2012) Acute respiratory distress syndrome: the Berlin Definition. JAMA 307: 2526-2533.

2. Pouchot J, Sampalis JS, Beaudet F, Carette S, Décary F, et al. (1991) Adult Still's disease: manifestations, disease course, and outcome in 62 patients. Medicine (Baltimore) 70: 118-136.

3. Gerfaud-Valentin M, Maucort-Boulch D, Hot A, Iwaz J, Ninet J, et al. (2014) Adult-onset still disease: manifestations, treatment, outcome, and prognostic factors in 57 patients. Medicine (Baltimore) 93: 91-99.

4. Zeng T, Zou YQ, Wu MF, Yang CD (2006) A multicenter study of patients with adult-onset Still's disease compared with healthy controls. J Rheumatol 32: 28-33.

5. Liu Z, Lv X, Tang G (2015) Clinical features and prognosis of adult-onset Still's disease: 75 cases from China. Int J Clin Exp Med 8: 16634-16639.

6. Cagatay Y, Gul A, Cagatay A, Kamali S, Karadeniz A, et al. (2009) Adult-onset Still's disease. Int J Clin Pract 63: 1050-1055.

7. Asanuma YF, Mimura T, Tsuibo H, Noma H, Miyoshi F, et al. (2015) Nationwide epidemiological survey of 169 patients with adult Still's disease in Japan. Mod Rheumatol 25: 393-400.

8. Ohita A, Yamaguchi M, Tsunematsu T, Kasukawa R, Mizushima H, et al. (1990) Adult Still's disease: a multicenter survey of Japanese patients. J Rheumatol 17: 1058-1063.

9. Pay S, Turkcapar N, Kalyoncu M, Simsek I, Beyan E, et al. (2006) A multicenter study of patients with adult-onset Still's disease compared with systemic juvenile idiopathic arthritis. Clin Rheumatol 25: 639-644.

10. Kim YI, Koo BS, Kim YG, Lee CK, Yoo B (2014) Clinical features and prognosis in 82 patients with adult-onset Still’s disease. Clin Exp Rheumatol 32: 28-33.

11. Sari I, Birlik M, Binicier O, Akar S, Yilmaz E, et al. (2009) A case of adult-onset Still’s disease complicated with diffuse alveolar hemorrhage. J Korean Med Sci 24: 155-157.

12. Hiijikata N, Takayamagi N, Sugita Y, Kawabata Y (2009) Adult-onset Still's Disease With Pulmonary Involvement. J Bronchology Interv Pulmonol 16: 277-282.

13. Qi H, Yin C, Xiao H, Duan T (2014) A rare case of diffuse pulmonary nodules in a patient with adult-onset Still’s disease. Intern Med 53: 1869-1872.

14. Dua AB, Manadan AM, Case JP (2013) Adult Onset Still's Disease Presenting with Acute Respiratory Distress Syndrome: Case Report and Review of the Literature. Open Rheumatol J 7: 125-128.

15. Yamaguchi M, Ohta A, Tsunematsu T, Kasukawa R, Mizushima Y, et al. (1992) Preliminary criteria for classification of adult Still’s disease. J Rheumatol 19: 424-430.

16. Hirohata S, Kamoshita H, Taketani T, Maeda S (1986) Adult Still’s disease complicated with adult respiratory distress. Arch Intern Med 146: 2409-2410.

17. Chvojka J, Krouzekcý A, Radej J, Šykora R, Karvunidis T, et al. (2009) [24-year old male with fever, multi-organ dysfunction and fast progressing ARDS]. Vnitr Lek 55: 991-994.

18. Manganelli P, Pietta P, Zucconi P (2003) Adult-onset Still's disease with respiratory distress syndrome, polyserositis and disseminated intravascular coagulation: a case with a fatal outcome. Clin Exp Rheumatol 1: 139.

19. Brun-Buisson C, Minelli C, Bertolini G, Brazzi L, Pimentel J, et al. (2004) Epidemiology and outcome of acute lung injury in European intensive care units. Results from the ALIVE study. Intensive Care Med 30: 51-61.

20. Fautrel B, Le Moël G, Saint-Marcoux B, Taupin P, Vignes S, et al. (2001) Diagnostic value of ferritin and glycosylated ferritin in adult onset Still’s disease. J Rheumatol 28: 322-329.

21. Schram AM, Campigotto F, Mullally A, Fogerty A, Massarotti E, et al. (2015) Marked hyperferritinemias does not predict for HLH in the adult population. Blood 125: 1548-1552.

22. Kim HA, An JM, Nam JY, Jeon JY, Suh CH (2012) Serum S100A8/A9, but not follistatin-like protein 1 and interleukin 18, may be a useful biomarker of disease activity in adult-onset Still's disease. J Rheumatol 39: 1399-1406.

23. Jung SY, Park YB, Ha YJ, Lee KH, Lee SK (2010) Serum calprotectin as a marker for disease activity and severity in adult-onset Still's disease. J Rheumatol 37: 1026-1034.

24. Kadavath S, Efthimiou P (2015) Adult-onset Still’s disease-pathogenesis, clinical manifestations, and new treatment options. Ann Med 47: 6-14.

25. Laskari K, Tzioufas AG, Moutsopoulos HM (2011) Efficacy and long-term follow-up of IL-1R inhibitor anakinra in adults with Still's disease: a case-series study. Arthritis Res Ther 13: R91.

26. Nordström D, Knight A, Luukkainen R, van Vollenhoven R, Rantalaiho V, et al. (2012) Beneficial effect of interleukin 1 inhibition with anakinra in adult-onset Still’s disease. An open, randomized, multicenter study. J Rheumatol 39: 2008-2011.

27. Soung Ha Cho, One Zoong Kim, Sang Woo Cho, Dong Min Lim, Su Kyoung An, et al. (2014) A Case of Adult Onset Still's Disease with Severe Pneumonitis Treated with Anakinra. Korean J Med 2: 245-250.

28. Slovis BS, Eyler AE (2007) A 33-year-old man with pharyngitis, transient rash, and multiorgan system failure. Chest 132: 1080-1083.

29. Albersmeyer MP, Hilge RG, Schulze-Koops H, Sitter T (2012) Adult-onset Still's disease in a patient with cystic fibrosis and its successful treatment with anakinra. Rheumatology (Oxford) 51: 1730-1732.

30. Efthimiou P, Kadavath S, Mehta B (2014) Life-threatening complications of adult-onset Still’s disease. Clin Rheumatol 3: 305-314.