Other full case

Periodontal infection in adult-onset Still's disease patient: clinical and haematological considerations

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In this case report, the authors described the first case of a patient with adult-onset Still's disease (AOSD) who presents advanced periodontal infection. AOSD is a rare systemic inflammatory disorder of unknown aetiology, characterised by spiking fever, usually exceeding 39°C, an evanescent salmon pink rash, arthritis and multiorgan involvement. Periodontal infection is a pathogen-induced oral inflammatory disease affecting the supporting tissues of teeth and is currently considered as a risk factor for cardiovascular disease. Several cytokines capable of inducing systemic effects are produced during the course of this infection and the values of serum markers of inflammation, such as C reactive protein (CRP), may significantly decrease after periodontal treatment. Although AOSD can produce elevations in CRP, similar increase may be produced by periodontal infection, suggesting the need for medical and dental diagnosis when evaluating the sources of acute-phase responses in systemic autoimmune disease patients.

BACKGROUND

Adult-onset Still's disease (AOSD) is a rare systemic inflammatory disease with an estimated incidence of 0.16 cases/100 000 persons/year¹ and women barely seem to be affected more often than men.² AOSD usually affects young people, with 75% of the cases reporting disease onset between 16 and 35 years of age.³ Aetiology is still unknown, however, it seems that an important role is played by various infectious agents, which would act as triggers in genetically predisposed hosts.² Diagnosis of AOSD is difficult to establish due to the non-specific clinical and laboratory findings, however it is mainly based on haematologic examinations and a triad of symptoms that include high-spiking fevers, a characteristic rash and arthritis/arthralgias.^{3–5} Fever generally exceeds 39°C and is transient, lasting typically under 4 h. The typical rash is characterised as salmon-pink, maculopapular eruption with mildly pruritic. Notable laboratory features of the disease are increased serum levels of C reactive protein (CRP), leukocytosis, liver dysfunction, negative results for both rheumatoid factor and antinuclear antibodies and an increased incidence of high levels of ferritin.^{1 6–9} Treatment comprises non-steroidal anti-inflammatory drugs, corticosteroids, immunosuppressive drugs (prednisone, methotrexate, azathioprine, ciclosporin A, cyclophosphamide).¹⁰

Periodontal infection is an inflammatory disease caused by specific periodontal pathogens, resulting in a progressive destruction of the supporting tissues of teeth, gingival bleeding, suppuration, gingival recession, dental mobility which eventually ends with tooth loss. The diagnosis is predominantly based on clinical and radiographic measures. Periodontal diseases are among the most prevalent chronic oral infections in humans and several cytokines are produced during this infection and cause systemic effects, which can be verified by changes in levels of CRP. Periodontal infection is considered a

potential risk factor for systemic inflammation and is a well known risk factor for cardiovascular diseases.^{11–13} The increased risk for systemic disease in subjects suffering from periodontal infection could be due to an increased prevalence and severity of bacteraemia associated with oral microorganisms.¹⁴

As patients with systemic autoimmune diseases are at higher risk of developing cardiovascular diseases,¹⁵ due to either infection or disease activity, elevated levels of inflammatory markers (such as CRP) and upregulation of the autoimmune process can contribute to the development of cardiovascular diseases, mainly atherosclerosis.¹⁵ In this case report, we described the first case of a patient with AOSD who presents advanced periodontal disease. This case is important because it shows that serum levels of CRP may be increased by both periodontal disease and AOSD, emphasising the need for medical and dental diagnosis when evaluating acute-phase responses in autoimmune diseases. Besides, it highlights the importance of preventing tooth loss and systemic complications by periodontal treatment.

CASE PRESENTATION

A 22-year-old girl was admitted to the hospital in July 2009 with a 2-month intermittent high fever (38–40°C). Physical examination revealed pain and oedema on right ankle with progression to knees, wrists and proximal interphalangeal, skin pruritic rash on trunk and limbs, diffuse myalgia and attention deficit disorder. The patient's ferritin level was found to be markedly elevated at 2605 ng/ml and leucocytosis of 19.200 cells/ml with 68% segmented leucocytes. The patient's erythrocyte sedimentation rate was 90 mm/h and CRP level of 12 mg/dl. She had test results that were positive for antinuclear antibodies (antibody titre, 1:160). Clinical investigations of systemic infection, neoplastic tumours and lymphoproliferative lesions were verified and

Figure 1 Several periodontal disease around the tooth 31 and 41 with calculus and plaque above and below the gum line. Observe the dark red colour of gingival margin inflammation around 31 and 41.

Figure 2 Periapical radiograph shows severe loss of alveolar bone around the tooth 31 and 41 and a build-up of calculus was observed.

were negative. Autoimmune and infective serological tests such as viral hepatitis tests, anti-immunodeficiency virus antibody, rheumatoid factor and mononucleosis antibodies were negative. Urinalysis, tomography and x-ray of thorax were normal. Imaging consult of abdomen have shown a splenomegaly.

Figure 3 Dental prosthesis was made after tooth extractions surgery. Observe the pink colour of healthy gum without inflammation.

Figure 4 Dental removable prosthesis facilitates the oral hygiene and it indicates for patient with attention deficit disorder.

Contemplating diagnostic criteria⁵ and after exclusion of other diagnostic possibilities, patient was diagnosed with AOSD. Patient met the proposed diagnosis criteria,⁵ which consisted of fever, arthralgia, typical rash, leukocytosis as major, sore throat, lymphadenopathy and/or splenomegaly, liver dysfunction and the absence of rheumatoid factor and antinuclear antibody as minor criteria. As a result of these findings, prednisone (1 mg/kg orally 1 time daily) was started to treat presumptive AOSD.

In her clinical evolution, symptoms were reduced by corticosteroid therapy with oral prednisone 1 mg/kg/day, and then was added methotrexate 15 mg/week. A flare-up of AOSD was established, especially based on the clinical symptoms. Clinical monitoring and analysis of serological examinations were made periodically. Over the following year although the patient remained well, she had related high bleeding gum and bad breath (halitosis).

In oral examination, it was identified a poor oral hygiene and advanced localised periodontal disease, mainly established on teeth 31 and 41 (figure 1) with heavy accumulation of calculus and dental plaque, gingival bleeding,

gingival recession and dental mobility grade 2–3. Plaque index and bleeding index were respectively 93.3% and 28.3%. Complete periapical radiographs were taken. Radiograph of 31 and 41 revealed the massive amount of bone loss (figure 2) which indicated dental extraction. Probing depth is obtained by adding the periodontal probe into gingival sulcus. The measurement is based on millimetre and is obtained with the distance of gingival margin from the limit of gingival sulcus. In clinical attachment loss, two measurements are used to calculate the clinical attachment level: (a) the probing depth and (b) the level of the gingival margin (distance from cemento-enamel junction to gingival margin).

Serum CRP levels were investigated before periodontal treatment, indicating high levels of serum CRP (26.98 mg/dl). Oral treatment consisted of full-mouth disinfection to suppress periodontopathic bacteria, followed by scaling and root planning and extraction of teeth number 31 and 41. Patient received oral hygiene instruction and was recommended to rinse with 0.12% chlorhexidine digluconate solution twice a day for 7 days. A positive correlation between periodontal inflammation and serum levels of CRP were observed at baseline examination and reduced after periodontal treatment. Therefore, the effect after the treatments on the levels of serum CRP was examined and oral prosthesis was made (figures 3 and 4). One month after periodontal treatment, the serum levels were 9 mg/dl. These findings suggested that serum CRP levels decreased after treatment, even though the systemic inflammatory chronic disease (AOSD) is characterised by frequent high levels of CRP.

CONCLUSION

Although CRP serum levels are commonly high in AOSD, we verified that blood levels of CRP may be reduced by elimination of periodontal infection. Periodontal infection could influence systemic diseases and treatment and control is recommended, mainly in patients on immunosuppressive therapy. Extensive periodontal disease is associated with increased CRP levels, suggesting the need for medical and dental diagnosis when evaluating the sources of acute-phase responses in some patients. Measures that can be implemented to improve oral health include definitive treatment of periodontal infection, regular visits to a dental professional for tooth-cleaning and improved oral hygiene.

INVESTIGATIONS

It was investigated if blood levels of CRP would decrease after periodontal treatment.

TREATMENT

The treatment is as described above.

OUTCOME AND FOLLOW-UP

Dental prosthesis was made after tooth extractions surgery. The patient is now in periodontal monitoring to prevent the infection in another site.

Learning points

- ▶ AOSD is an autoimmune disease that can increase inflammatory markers such as CRP and it contributes to diagnosis of disease.
- ▶ High levels of CRP blood levels have been documented as a risk factor for cardiovascular diseases.
- ▶ Periodontal infection may increase inflammatory markers, such as CRP.
- ▶ Periodontal treatment and maintenance may provide oral and systemic health, mainly in patients on immunosuppressive therapy.

Competing interests None.

Patient consent Obtained.

REFERENCES

1. Ohta A, Yamaguchi M, Kaneoka H, *et al.* Adult Still's disease: review of 228 cases from the literature. *J Rheumatol* 1987;**14**:1139–46.
2. Bagnari V, Colina M, Ciancio G, *et al.* Adult-onset Still's disease. *Rheumatol Int* 2010;**30**:855–62.
3. Yamaguchi M, Ohta A, Tsunematsu T, *et al.* Preliminary criteria for classification of adult Still's disease. *J Rheumatol* 1992;**19**:424–30.
4. Kaneko K, Kaburaki M, Muraoka S, *et al.* Exacerbation of adult-onset Still's disease, possibly related to elevation of serum tumor necrosis factor- α after etanercept administration. *Int J Rheum Dis* 2010;**13**:e67–9.
5. Lian F, Wang Y, Yang X, *et al.* Clinical features and hyperferritinemia diagnostic cutoff points for AOSD based on ROC curve: a Chinese experience. *Rheumatol Int* 2010 (Epub ahead of print).
6. Kong XD, Xu D, Zhang W, *et al.* Clinical features and prognosis in adult-onset Still's disease: a study of 104 cases. *Clin Rheumatol* 2010;**29**:1015–19.
7. Franchini S, Dagna L, Salvo F, *et al.* Adult onset Still's disease: clinical presentation in a large cohort of Italian patients. *Clin Exp Rheumatol* 2010;**28**:41–8.
8. Sobieska M, Fassbender K, Aeschlimann A, *et al.* Still's disease in children and adults: a distinct pattern of acute-phase proteins. *Clin Rheumatol* 1998;**17**:258–60.
9. Fautrel B, Le Moël G, Saint-Marcoux B, *et al.* Diagnostic value of ferritin and glycosylated ferritin in adult onset Still's disease. *J Rheumatol* 2001;**28**:322–9.
10. Efthimiou P, Paik PK, Bielory L. Diagnosis and management of adult onset Still's disease. *Ann Rheum Dis* 2006;**65**:564–72.
11. Sanz ME, López JC, Alonso JL. Six conformers of neutral aspartic acid identified in the gas phase. *Phys Chem Chem Phys* 2010;**12**:3573–8.
12. Gualtierotti R, Biggioggero M, Penatti AE, *et al.* Updating on the pathogenesis of systemic lupus erythematosus. *Autoimmun Rev* 2010;**10**:3–7.
13. Wajed J, Ahmad Y, Durrington PN, *et al.* Prevention of cardiovascular disease in systemic lupus erythematosus—proposed guidelines for risk factor management. *Rheumatology (Oxford)* 2004;**43**:7–12.
14. Kobschull M, Demmer RT, Papapanou PN. 'Gum bug, leave my heart alone!' — epidemiologic and mechanistic evidence linking periodontal infections and atherosclerosis. *J Dent Res* 2010;**89**:879–902.
15. Sitia S, Atzeni F, Sarzi-Puttini P, *et al.* Cardiovascular involvement in systemic autoimmune diseases. *Autoimmun Rev* 2009;**8**:281–6.

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