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## Optic neuritis in a psoriatic arthritis patient treated by infliximab

Masako MINAMI-HORI<sup>1)</sup>, Hitomi Tsuji<sup>1)</sup>, Hidetoshi Takahashi<sup>1)</sup>,  
Kazuomi Hanada<sup>2)</sup>, Hajime IIZUKA<sup>1)</sup>

1) Department of Dermatology, Asahikawa Medical University,  
Asahikawa, Japan

2) Department of Ophthalmology, Asahikawa Medical University,  
Asahikawa, Japan

Correspondence: Masako MINAMI-HORI, MD., Department of  
Dermatology, Asahikawa Medical University, Midorigaoka  
Higashi 2-1-1-1, 078-8510, Asahikawa, Japan.

Email: masakoh@asahikawa-med.ac.jp

Phone: 81-166-68-2523

Fax Number: 81-166-68-2529

We report a case of psoriatic arthritis (PA) who developed optic neuritis (ON) during infliximab therapy. To the best of our knowledge, this is the first report of ON associated with infliximab in a Japanese psoriasis patient. The patient was a 55-year-old man who had arthritis of finger joints, wrists and elbows, and well demarcated hyperkeratotic scaly erythematous plaques on umbilicus, groins, trunk and scalp (Fig. 1). The histopathology of thigh lesion revealed hyperkeratosis, parakeratosis and neutrophilic microabscess in horny layer. Absence of granular layer and elongation of rete ridges were compatible with psoriasis (Fig. 2).

He did not have any prior history of demyelinating diseases. Anteroposterior radiographic finding of hands revealed narrowing of joint spaces with bone proliferation on all distal interphalangeal joints. His DAS28-CRP score was 3.21. While skin lesions were well controlled with topical corticosteroid and active vitamin D3 ointment, joint pain was aggravated. . Tuberculin skin test was positive and computed tomography

detected two small old granulomatous nodules on his left lung. He was given isoniazid 300mg once daily according to the Japanese standard guideline. After he received infliximab, his skin lesions and arthritis disappeared. However, he noticed numbness of hands and feet 4 weeks after the 5<sup>th</sup> infusion of infliximab.

Isoniazid-induced peripheral neuropathy was suspected and rifampicin 450 mg once daily was initiated instead of isoniazid. However, 4 weeks after the 6<sup>th</sup> infusion of infliximab, he developed blurred vision and superior visual field depression in his right eye. Best corrected visual acuity (BCVA) of the right eye was 20/100. The results of contrast-enhanced brain magnetic resonance imaging (MRI) and lumbar puncture were normal. Neither anti-aquaporin-4 antibody nor evidence for multiple sclerosis (MS) was detected. He was diagnosed as right ON by ophthalmologists in our hospital. Following intravenous methylprednisolone (1000mg/day 3 days), oral prednisone was prescribed and tapered off. His vision improved gradually in the subsequent 8 weeks. His BCVA was 20/20 in right eye and his

visual field recovered completely. The numbness of hands and feet also gradually disappeared following the corticosteroid therapy. Rheumatoid factor and ANA were negative throughout the course, and there was no change of immunoglobulin levels during the development and course of ON. He did not receive further infliximab therapy.

Tumor necrosis factor alpha (TNF-  $\alpha$  ) inhibitors are used for rheumatoid arthritis, inflammatory bowel diseases, and PA. There are several adverse events, however, after the TNF-  $\alpha$  antagonists therapy, such as infections, congestive heart failure, and demyelinating diseases including MS and ON. ON is an inflammatory optic nerve demyelinating disease that is primary or MS-associated. Specific brain MRI abnormalities suggest the association with MS.

Twenty-three cases of ON associated with TNF-  $\alpha$  antagonists have been reported up until December 2011<sup>1)</sup>. Fifteen cases were related to infliximab, 5 cases to etanercept, and 3 cases to adalimumab. The reason why TNF-  $\alpha$  antagonists induce ON

remains unknown. However, Robinson et al<sup>2)</sup> suggested that TNF- $\alpha$  antagonists enhance disease activity of MS by increasing peripheral autoreactive T cells, some of which may be myelin-specific. Aasly<sup>3)</sup> reported that TNF- $\alpha$  antagonists-related ON usually appear during the first year of treatment following the 3<sup>rd</sup> or more infusions. Simsek et al<sup>4)</sup> reported that the median interval from the first administration of TNF- $\alpha$  antagonist to the onset of ON was 7.5 months (range 2 months to 1.5 years). Our case also showed blurred vision and visual field depression after 8 months following the initiation of infliximab therapy. Although most cases improved with corticosteroid treatment, the visual defect may be irreversible in some patients<sup>4)</sup>. Dermatologists should recognize this rare but serious complication, which is associated with TNF- $\alpha$  inhibitors.

## References

- 1 Faillace C, de Almeida JR, de Carvalho JF. Optic neuritis after infliximab therapy. *Rheumatol Int* 2011; Dec 25 Epub.
- 2 Robinson WH, Genovese MC, Moreland LW. Demyelinating and neurologic events reported in association with tumor necrosis factor alpha antagonism: by what mechanisms could tumor necrosis factor alpha antagonists improve rheumatoid arthritis but exacerbate multiple sclerosis? *Arthritis Rheum* 2001;**44**:1977-1983.
- 3 Aasly JO. Bilateral Optic Neuritis Associated with the Use of Infliximab. *Case Rep Ophthalmol Med* 2011; Nov 20 Epub.
- 4 Simsek I, Erdem H, Pay S et al. Optic neuritis occurring with anti- tumor necrosis factor  $\alpha$  therapy. *Ann Rheum Dis* 2007; **66**:1255-1258

## Figure legends

### Figure 1

Well demarcated hyperkeratotic scaly erythematous plaques on groins and pubic area.

### Figure 2

Histopathology of the lesion revealed hyperkeratosis, parakeratosis and microabscess of neutrophils in horny layer in H-E stain (x100). The epidermis showed absence of granular layer and mild acanthosis.



