

Department of Internal Medicine

Division of Rheumatology

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General Summary

An internist must aim to practice patient-oriented medicine that is well grounded in medical science. Therefore, our department encourages its staff members to do basic and clinical research. Major fields of research are clinical and experimental immunology.

Research Activities

Clinical and experimental studies of autoimmune disease were performed.

1. Analysis of the relationship of neovascularization in autoimmune animal models

Several studies have found that neovascularization inhibitors inhibit the development of arthritis in animal models of rheumatoid arthritis. We evaluated the effects of the neovascularization inhibitor endostatin in murine models of collagen-induced arthritis and bleomycin-induced pulmonary fibrosis.

Furthermore, we are investigating whether there was any relation between *Bombina variegata* peptide 8 and angiogenesis in autoimmune arthritis.

2. Evaluation and analysis of synovial blood flow signals on power Doppler ultrasonography in patients with rheumatoid arthritis

To assess synovial neovascularization in patients with rheumatoid arthritis, we have evaluated the synovial blood flow signals in patient's joints by means of power Doppler ultrasonography and analyzed the correlation with serum levels of neovascularization-related factors (e.g., vascular endothelial growth factor) and disease activity.

3. Histopathological comparison between dermatomyositis and polymyositis

We have obtained specimens of muscle, fascia, and skin through "en-bloc biopsy" from patients with dermatomyositis or polymyositis under the guidance of magnetic resonance imaging. We then histopathologically investigated the severity of inflammation around the muscle, fascia, and subcutaneous tissue to determine differences between dermatomyositis and polymyositis.

4. Clinical studies aimed at standardizing immunosuppressant therapy for autoimmune diseases

Many immunosuppressant drugs have been used to treat severe autoimmune disease, such as amyopathic dermatomyositis with interstitial pneumonia, but the efficiency of and treatment strategies for these drugs have not been clarified. Clinical trials can help establish treatment strategies for severe autoimmune disease. Clinical studies aimed at standardizing immunosuppressant therapy for autoimmune diseases were performed.

Publications

Kurosaka D, Hirai K, Nishioka M, Miyamoto Y, Yoshida K, Noda K, Ukichi T, Yanagimachi M, Furuya K, Takahashi E, Kingetsu I, Fukuda K, Yamada A. Clinical significance of serum levels of vascular endothelial growth factor, angiopoietin-1, and angiopoietin-2 in patients with rheumatoid arthritis. *J Rheumatol* 2010; **37**: 1121-8.
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Takahashi E, Hirai K, Noda K, Ukichi T, Furuya K, Yanagimachi M, Kingetsu I, Fukuda K, Yamada A. Fasciitis as a common lesion of dermatomyositis, demonstrated early after disease onset by en bloc biopsy combined with magnetic resonance imaging. *Arthritis Rheum* 2010; **62**: 3751-9.