Infectious Agents Involved in Rheumatoid Arthritis

- Proteus mirabilis
- EBV
- Mycobacteria
- Mycoplasma
- Chlamydia
- Yersinia
- Salmonella
- Shigella
- Campylobacter

Infectious Agents Involved in Rheumatoid Arthritis

- Staphylococcus
- Streptococcus
- Candida
- Clostridium
- Borrelia
- Leptospiro
- Erysiplotrix
- Klebsella
- Oral Bacteria

Rheumatoid arthritis (late stage)

Boutonniere deformity of thumb

Ulnar deviation of metacarpophalangeal joints

Swan-neck deformity of fingers
Mycoplasma

The family Mycoplasmataceae contains two genera that infect humans: Mycoplasma and Ureaplasma, which are usually referred to collectively as mycoplasmas. Although there are many species of mycoplasmas, only four are recognized as human pathogens; Mycoplasma pneumoniae, Mycoplasma hominis, Mycoplasma genitalium, and Ureaplasma urealyticum.

- Once thought to be viruses
- Smallest, free-living, self-replicating, fastidious bacteria known.
- Lacks a cell wall rendering them immune to cell-wall-active antibiotics.
- Ubiquitous in nature found in a variety of insects, plants, animals and humans.
- 17.4% of Lyme disease patients test positive for Mycoplasma fermentans.

**BMC Musculoskelet Disord.** 2009 Aug 3;10:97.

Presence of Mycoplasma fermentans in the bloodstream of Mexican patients with rheumatoid arthritis and IgM and IgG antibodies against whole microorganism.

- Gil C, Bracamonte, S., Talavera, S., García-Latorre, E., Cedillo, L.
- Centro de Investigaciones en Ciencias Microbiológicas, Instituto de Ciencias, Benemérita Universidad Autónoma de Puebla, Edificio 103, Ciudad Universitaria, Puebla, Pue, Mexico.
- cgil@siu.buap.mx

**Abstract**

**BACKGROUND:** Increasing evidence incriminates bacteria, especially Mycoplasma fermentans, as possible arthritogenic agents in humans. The purpose of this study was to investigate M. fermentans in the bloodstream of patients with rheumatoid arthritis.

**METHODS:** Two hundred and nineteen blood samples from patients with rheumatoid arthritis, systemic lupus erythematosus, antiphospholipid syndrome, and healthy individuals were screened by bacterial culture and direct PCR in order to detect mycoplasmas; IgM and IgG against M. fermentans PG18 were also detected by ELISA and immunoblotting assays in patients and rheumatoid arthritis and healthy individuals.

**RESULTS:** Blood samples from patients with antiphospholipid syndrome and healthy individuals were negative for mycoplasma by culture or direct PCR. In blood samples from patients with systemic lupus erythematosus detected by direct PCR M. fermentans in 2/50 (4%), M. hominis in 2/50 (4%), and U. urealyticum in 1/50 (0.5%). In patients with RA M. fermentans was detected by culture in 13/87 blood samples and in 13/87 by direct PCR, however, there was only concordance between culture and direct PCR in six samples, so M. fermentans was detected in 20/87 (23%) of the blood samples from patients with RA by either culture or PCR. Antibody-specific ELISA assay to M. fermentans PG18 was done, IgM was detected in sera from 40/87 patients with RA and in sera of 7/67 control individuals, IgG was detected in sera from 48/87 RA patients and in sera from 7/67 healthy individuals. Antibody-specific immunoblotting to M. fermentans PG18 showed IgM in sera from 35/87 patients with RA and in sera from 4/67 healthy individuals, IgG was detected in sera from 34/87 patients and in sera from 5/67 healthy individuals.

**CONCLUSION:** Our findings show that only M. fermentans produce bacteremia in a high percentage of patients with RA. This finding is similar to those reported in the literature. IgM and IgG against M. fermentans PG18 were more frequent in patients with RA than healthy individuals.


Frequency of Mycoplasma hominis and Ureaplasma urealyticum infections in women with systemic lupus erythematosus.

- Machado AA, Zorzi AR, Gália AE, Donadi EA.
- Faculdade de Medicina de Ribeirão Preto, Universidade de São Paulo, Brasil. aamachad@fmrp.usp.br

**Abstract**

Ureaplasma urealyticum (UU) and Mycoplasma hominis (MH) have been detected in the urine of women with systemic lupus erythematosus (SLE). We evaluated the presence of these mycoplasma in the endocervix of women presenting SLE. A total of 40 SLE patients (mean age 40.2 years), and 51 healthy women (mean age 30.9 years), were studied. Endocervical swabs were cultured in specific liquid media for MH or UU, detected by a quantitative color assay, and considered positive at >10^3 dilutions. Statistical analysis was performed using the two-tailed Fisher test. UU was detected in 22.5% of patients and in 11.8% of controls (p= 0.000059). MH was detected in 20% of patients and 2% controls (p=0.003966). Both mycoplasmas were detected in 7.3% patients and 0% controls (p<0.000001). The results reported here corroborate the association of mycoplasma infection and SLE. Thus, these agents may stimulate the production of autoreactive clones.
Distribution of Mycoplasma pneumoniae and Mycoplasma salivarium in the synovial fluid of arthritis patients.

Abstract

By use of a very sensitive nested PCR method targeting part of the strongly conserved mycoplasmal 16S RNA genes, Mycoplasma pneumoniae was found in the synovial fluid of 19/24 (79%) of rheumatoid arthritis patients, 6/6 (100%) of patients with non-rheumatoid inflammatory arthritis, and 8/10 (80%) of osteoarthritis patients attending the rheumatology clinic for drainage of joint effusions. It was not found in the synovial exudates of 13 people attending the orthopedic clinic with traumatic knee injuries or undergoing surgery for knee replacement. However, M. pneumoniae was detected in 2/4 synovial biopsy specimens from orthopedic patients with traumatic knee injuries. M. pneumoniae was associated with the increased synovial fluids found in arthritic flares but was not found in the synovial fluids of trauma patients. Mycoplasma salivarium occurred sporadically. Mycoplasma fermentans had previously been isolated from patients with inflammatory cellular infiltrates, such as rheumatoid arthritis, but it was not detected for osteoarthritic patients from either clinic. It is possible that these organisms may contribute to chronic inflammation within the joints.

LUPUS

Environmental triggers

Genetic susceptibility leads to hyperactive immune response

Tissue damage

Self-destruction: Environmental factors such as viruses interact with inherited risks to create a flood of “self” antibodies that harm tissues.
Human cytomegalovirus is a common herpesvirus that is linked to autoimmunity, especially in genetically predisposed persons. The article by Hsieh and colleagues in a previous issue of Arthritis Research & Therapy suggests that a C-terminal peptide of the human cytomegalovirus protein pp65 is highly immunogenic in patients with systemic lupus erythematosus and that antibodies against this peptide cross-react with nuclear proteins and double-stranded DNA, which are highly frequent autoantibodies in systemic lupus erythematosus patients. These observations highlight the fact that immunization with one small cytomegalovirus-specific peptide results in multiple autoreactive antibodies, probably through molecular mimicry and epitope spreading, in genetically predisposed persons.

The prevalence and activity of human herpesvirus-6 in patients with collagen vascular diseases (CVD) was determined. One hundred and fifty patients with CVD (56 with systemic lupus erythematosus, 92 with rheumatoid arthritis, 1 with Sharp's syndrome and 1 with atypical polyclonal lymphoproliferation) were screened serologically (IFA and ELISA) for antibodies against human herpesvirus-6. Virus isolation was attempted from peripheral blood lymphocytes (PBL) of 25 persons with various disorders. PBL were grown in tissue culture and tested with standard HHV-6-positive antisera for viral antigen expression. Supernatants of the patient's lymphocyte cultures were used to infect HSB2 cells, and virus infection in these cells was proven by IFA, in situ hybridization and by electron microscopy. Fiftynine percent of the SLE patients, 6.5% of the RA patients and both patients with Sharp's syndrome or with APL had antibody titers indicative of active HHV-6 infection. Virus cultures were positive in 9 of the 25 attempts with establishment of stable virus lines. These patients were 5 with SLE or UCVD, and one each with RA, CFS, APL and a healthy control. Reactivated and chronic active HHV-6 infections are frequent in SLE-like EBV in RA. The role of these viruses in the pathogenesis of the diseases or in their reactivation still needs further investigation.
Case Study

- Rheumatoid Arthritis
- 28 year old female
- Significant knee swelling, fingers, elbows, low back affected
- Poor digestion
- Fatigue
- Brain Fog
- Ice cold hands and feet
- Hypothyroid

Olive leaf extract
- Larrea Tridentata
- Artemisinin
- Sarsaparilla
- Usnea Lichen
- Uva Ursi

General functional medicine: GI support, food sensitivities, alkaline diet, vitamin C & Quercitin, adaptogens, thyroid support etc.
Conclusion

Check all RA & Lupus patients for infections. Patients will report significant and immediate improvement when the infection is addressed.

General functional medicine approaches will improve the patient's symptoms but treatment of the microbes will take the patient to the next level of healing.

www.infectionconnection.net