

Multiple Infectious Agents in Joint Fluid of Patients with Rheumatoid and Reactive Arthritides

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We evaluate the usefulness of negative contrast electron microscopy (NEM) modified assay for the visualization of infectious agents in synovial fluid (*SyF*) obtained from inflamed joints of 21 patients with rheumatoid (RA) and 20 reactive (ReA) arthritides. NEM assay modification was: the use of cacodylate buffer saline instead of phosphate buffer to solve the components of fixative solution for *SyF* fixation; the use of optimal dilutions of fixed *SyF* (1:50-250); the compilation of a panoramic view from EM microphotographs of found infectious agents for each patient affected by arthritis.

NEM assay adopted for visualization of infectious agents in *SyF* of RA and ReA patients revealed not one but the broad spectrum of multiple infectious agents, possible inducers or activators of arthritides: from 2 to 6 kinds of viruses (some of which were aggressive oncoviruses, such as *HBV*, *HCV*, *CMV*, *EBV*), microbes/bacteria, possible Protozoas (some one intestinal as *Amoeba*), microhelminthes, even fungus (Fig.1, 2). Viruses prevail (100% of cases) in *SyF* of both arthritides, in RA mainly Herpesviruses (81%) including *CMV* (45%) and *EBV* (14%), in ReA mainly Influenzaviruses (65%). The other frequent infectious agents was *Protozoas* found in *SyF* of 71% in ReA and of 67% in RA cases.

The modified NEM assay is an excellent EM technique for an early visualization of infectious agents in synovial fluid of patients with RA and ReA and for preliminary detection of type of infectious agent. The role of different infectious agents persisting in synovial fluid of inflamed joint in patients with RA and ReA, an autoimmune joint inflammatory diseases, and evaluation of the dynamics of human - microbe ecology needs further investigation.

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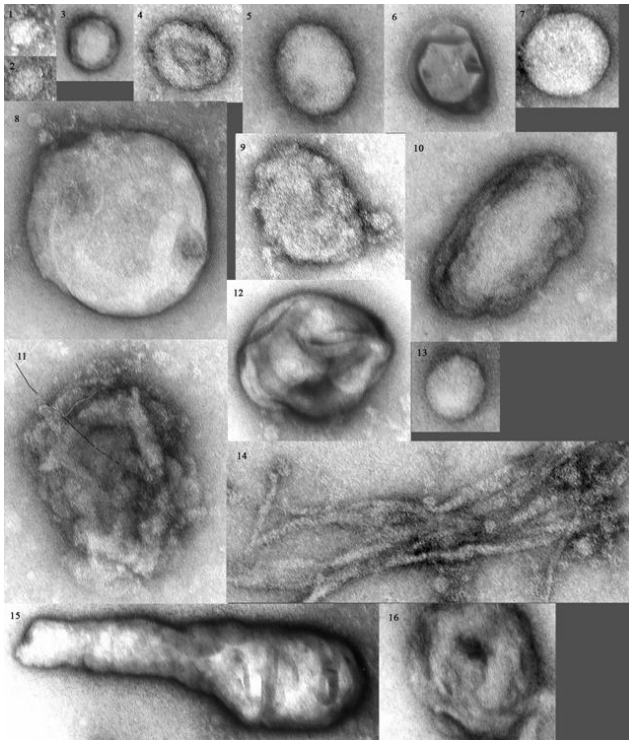


Figure 1. Rheumatoid arthritis. Suspected viruses: 1, 2 – *Hepatitis B virus (HBV)*, (UA,PTA); 3 - *Rhinovirus*. (PTA); 4 - *Influenzavirus* (UA); 5, 6, 13 - *Herpesvirus* (UA, PTA, UA); 7 – *Picornaviridae (Enterovirus?)* (UA); 9, 11, 16 – *Paramyxoviridae Parainfluenzavirus* (UA, PTA); 13 - not defined virus (UA); Suspected Protozoas: 8, 10 – cistozoite of *Protozoa* (PTA, UA); 12 - *Microsporidia cistozoite (Cryptosporidium parvum?)*, (PTA); 15 - suspected trophozoite of *Protozoa* (PTA); Suspected fungus: 14 - hyphae of *Candida albicans* (UA). TEM, x 160 000.

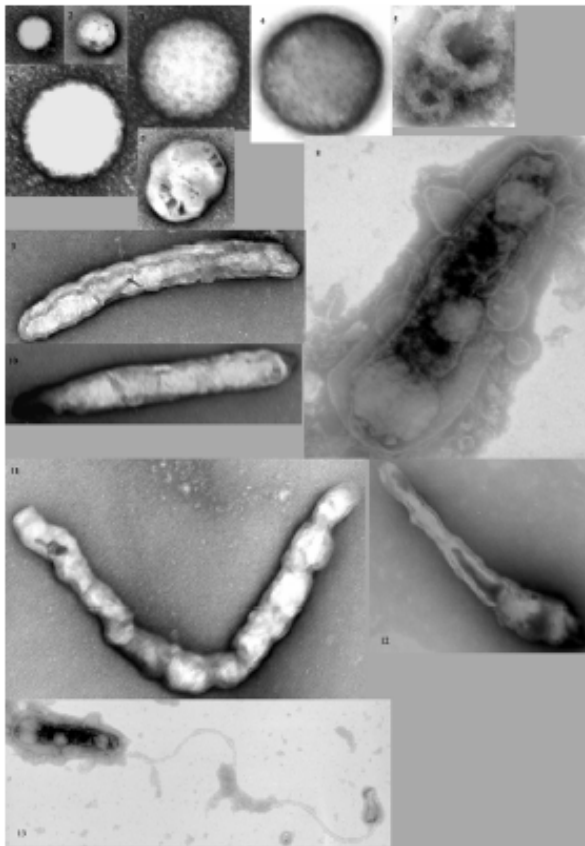


Figure 2. Reactive arthritis. Suspected viruses: 1, 2 - *Rhinovirus*(UA, PTA); 3, 4, 6 - *Herpes simplex viruses* (UA, (PTA)); 5 - *Influenzavirus* (UA); 7 – *Undefined virus* (PTA); Suspected Protozoas: 8, 13 - *Intestinal flagellated Amoeba* (PTA) x 1600, x 80 000; 9, 10, 11, 12 - *taxyzoites of Protozoa*(PTA,UA).TEM, x 160 000.