

MEDICINE

Locate Rheumatoid Link

Plasma cells in the synovial membrane that lines the joints and certain cells in the lymph nodes have been pinpointed as sites of the "rheumatoid factor."

AN IMPORTANT missing link in the puzzle of rheumatoid arthritis has been established with the pinpointing of the cells that produce the "rheumatoid factor," a mysterious substance found in the blood of arthritics.

The discovery furnishes medical investigators with a new lead to the study of rheumatoid arthritis and may even provide physicians with a new technique for diagnosing the nation's number one crippling disease.

The rheumatoid factor had previously been identified, isolated and purified, but its origin had been unknown, scientists at the American Rheumatism Association meeting in Detroit learned.

A research team, headed by Dr. Robert C. Mellors of New York's Hospital for Special Surgery, Philip D. Wilson Research Foundation, has now traced the site of formation of the factor to two kinds of cells found in the body tissues of patients suffering from the disease.

These cells are the plasma cells present in the synovial membrane that lines the joints and the "large pale cells" of germinal centers of lymph nodes.

Dr. Mellor pointed out that inflammation of synovial membrane and subsequent swelling of the joints are early pathological changes that characterize the disease, and it

is in such membrane that the plasma cells are found. Swollen lymph nodes, also characteristic of rheumatoid arthritis, contain the "large pale cells."

It is known that both of these cells produce immune bodies or antibodies, one of the body's defenses against infectious disease.

The significance of Dr. Mellor's investigation lies in the fact that the rheumatoid factor behaves in certain respects like an antibody and that it is formed by cells that produce antibodies.

What remains to be clarified is whether the rheumatoid factor is in fact an antibody and, if so, which agents or materials cause the two types of cells to produce the factor in the first place. Many researchers suspect the rheumatoid factor is several antibodies.

If the rheumatoid factor has a protective purpose, then Dr. Mellor's study might provide a new lead in the search for the agent that is ultimately responsible for rheumatoid arthritis. If the factor has no antibody purpose, then its formation must be viewed as some sort of "metabolic error," he said.

Arthritis in Colitis

CONTRARY to traditional belief, the joint diseases accompanying ulcerative colitis probably are not identical with rheumatoid arthritis.

About seven percent of patients suffering from this form of colitis also have swollen and inflamed joints, symptoms long assumed to stem from rheumatoid arthritis.

A study involving 52 patients suffering from ulcerative colitis and various joint symptoms, Dr. Currier McEwen of New York University Medical College told the Rheumatism Association, indicates that this belief is probably not true.

Arthritis of the peripheral joints was found in 33 of the patients. But, in contrast to rheumatoid arthritis, this arthritis usually was temporary rather than chronic. Unlike rheumatoid arthritis which appears symmetrically (that is, in both knees, elbows or ankles), the peripheral arthritis appeared only in single joints in most cases.

Dr. McEwen also pointed out that blood tests for rheumatoid factor, a mysterious substance found in the serum of rheumatoid arthritics, proved negative in these patients.

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TECHNOLOGY

AEC Operates Reactor For Nuclear Safety

See Front Cover

SPERT-III, described as the nation's most versatile facility for studying nuclear reactor safety, is operated for the U.S. Atomic Energy Commission by the Phillips Petroleum Company at the National Reactor Testing Station in Idaho.

The photograph on the cover of this week's SCIENCE NEWS LETTER shows a birds-eye view of the general interior of the Special Power Excursion Reactor Test No. 3. The reactor top and control rod drive mechanism are visible at top center. The small white tank at bottom center is the system pressurizer. The horizontal vessels on either side are heat exchangers.

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PHYSIOLOGY

Succeed in Recording Whale's Heart Beat

THE HEARTBEAT of a whale has been recorded by scientists at Woods Hole Oceanographic Institution after a 45-foot, 50-ton male finwhale beached at Provincetown on the tip of Cape Cod.

The accomplishment followed years of vain attempts to study the heart function of the largest existing animal.

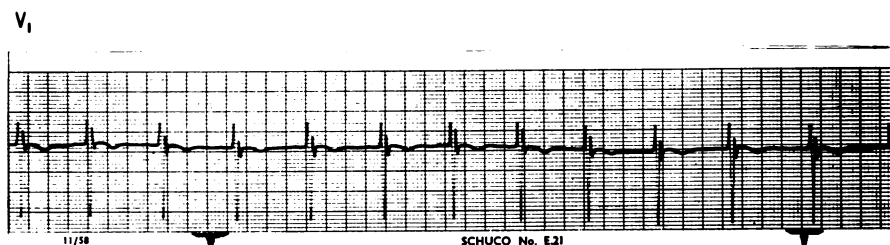
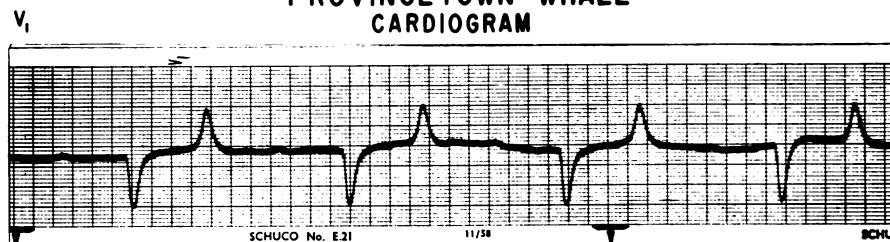
Cardiograms showed a pulse beat of 25 per minute and an estimated heart size of about 500 pounds. A normal human pulse beat is about 72 per minute and a human heart weighs about 250 grams.

As the whale's condition deteriorated there were changes in the cardiogram not unlike those seen in human cardiograms when a patient's oxygenation is impaired. It seemed the whale suffered a conduction block, a common defect in a human heart.

Efforts by the Animal Rescue League to keep the whale moist (a dry whale does not live long) and by the U.S. Coast Guard to tow him out to sea failed five times, and the whale could not be saved.

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PROVINCETOWN WHALE CARDIOGRAM



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