

Medicine by John Grauerholz, M.D.

Rheumatic fever returns

The return of another old scourge shows it's not yet time to abandon well-established procedures for identifying and treating strep.

Along with measles and tuberculosis, another unwelcome visitor from the past appears to be staging a comeback in the present economic "recovery." Rheumatic fever, which in the 20th century had "virtually disappeared," is back in force in the intermountain area of the United States.

Writing in the Feb. 19, 1987 issue of *The New England Journal of Medicine*, a group of physicians at Primary Children's Medical Center in Salt Lake City, Utah, report on an outbreak of 74 cases of rheumatic fever over an 18-month period. This is an eightfold increase in annual admissions for this disease compared to the 1975-85 decade.

As with TB, rheumatic fever had declined after World War II, especially in the last 20 years when incidence among school children in major cities dropped by over 90%, and the great rheumatic fever sanitariums had gone the way of the tuberculosis institutions. The disease has continued to be a major cause of death and disability among children and adults in the impoverished areas of the Third and Fourth World.

While rheumatic fever is generally concentrated in socio-economically deprived minority groups, this outbreak appears to violate that rule. The patients were predominantly white (71 of 74 cases) and came from families with an average income of \$34,000 a year, compared to an average income of \$24,000 a year for the state of Utah. Yet the average number of family members in the households of rheu-

matic fever cases was 6.5, compared to 3.2 family members per average household, and 65% of the patients shared a bedroom with one or more family members. Thus the same conditions of crowding, which predispose to transmitting the streptococcal bacteria which cause rheumatic fever, are beginning to affect the so-called middle class.

Another factor in this outbreak appears to be a change in the nature of the bacteria which causes the disease, the beta hemolytic streptococcus, which causes streptococcal pharyngitis or "strep throat." The problem with this type of infection is that, besides the sore throat and fever associated with the acute infection, a number of secondary problems arise after the acute infection is over. These problems center around various misfunctions of the immune response to the primary infection.

Rheumatic fever is one of these post-infectious problems and gets its name from one of its major symptoms, inflammation of multiple joints, known as polyarthritis. The other major organ systems affected are the heart and the nervous system. The whole heart muscle can become inflamed (carditis), or the process can especially attack the heart valves, most commonly the mitral valve which separates the two left chambers of the heart. In the nervous system, the inflammation affects the brain centers responsible for coordinating body movement, producing a syndrome of repetitive, dance-like movements known as

Sydenham's chorea.

The cause of these problems is the fact that certain surface antigens of the streptococcal bacterium are very similar to antigens on the surface of the body's own heart, brain, or joint cells. So when the body makes antibodies against the streptococcus, these antibodies attack the body cells which share these common surface antigens. Since there is significant variation from one strain of streptococcus to another, some strains are highly rheumatogenic (i.e., commonly cause rheumatic fever) whereas others have almost no ability to produce rheumatic fever.

In the Utah cases, not only was the organism highly rheumatogenic, but the incidence of heart involvement was extremely high, affecting 91% of the patients. Such high levels of cardiac involvement have not been reported among white patients in other studies. The incidence of nervous system involvement was also quite high, compared to other studies, indicating that this particular organism particularly disposes its victims to the more disabling and life-threatening manifestations of rheumatic fever.

Because of the dramatic decline in rheumatic fever, many authorities have questioned the "cost effectiveness" of aggressive diagnosis and therapy of streptococcal pharyngitis and such measures as cultures of family contacts. To quote the Utah physicians: "Our experience in the last year and a half clearly demonstrates that acute rheumatic fever has not disappeared from our area. The outbreak does demonstrate however, that acute rheumatic fever is still present in the continental United States and remains an important threat. We believe that abandonment of well-established principles for recognizing and treating streptococcal infection is not yet justified."