

REVIEW

Mechanisms of Cell and Tissue Injury Induced by Group A Streptococci: Relation to Poststreptococcal Sequelae*

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V. Tissue Injury Induced by Streptococcal Cell-Wall Components

The cell wall of group A streptococci is composed of a complex structure of polysaccharides, mucopeptides, teichoic and teichuronic acids, hyaluronic acid, and several protein antigens (M, R, T) [4, 5, 369]. These structures surround the bacterial protoplast that contains the synthetic and hereditary apparatus of the streptococcal cell.

The mechanism of induction of tissue lesions by whole streptococci is complex and probably involves both toxic and immunopathologic phenomena (see section II). One has to differentiate between the tissue reactions induced by intact, dead streptococci and those induced by actively proliferating streptococci, capable of elaborating toxic products, which enhance tissue damage and modify the host responses. One has to consider that nonimmunized animals will probably react differently, as compared with immunized ones, to some of the antigens.

Studies describing the induction of tissue lesions in laboratory animals after infection with living group A streptococci have been published. Few investigations claimed that the lesions in the animals were similar to those of humans suffering from poststreptococcal complications [2, 3] (see also section II). No explanation for the mechanisms involved in the initiation of the tissue lesions were usually given, and it was generally stated that both toxic and immunologic phenomena might have been responsible for the development of the pathologic alterations. Thus, data obtained from animals infected with living streptococci are usually difficult to analyze and to interpret because of the complexity of the host-parasite interrelationships that accompany infection with streptococci.

Since clearer and more definitive answers were obtained from experimental animals injected with fractions of the cell wall, the data on the role played by isolated cell-wall components in the initiation of tissue damage may be more informative and may help in elucidation of the mechanisms of tissue damage induced by living streptococci in humans.

* Sections I-IV of this review were published in the September 1972 issue of the *Journal*.