

ALTERATION OF THE COMPLEMENT SYSTEM
IN CHRONIC IDIOPATHIC URTICARIA

NAV1.954330.003

LCDR DAVID S. Hurewitz, MC USNR*

~~Mr.~~ Carlos M. Arroyave**

CDR Daniel Masdell, MC USN*

~~Mr.~~ Donald Stevenson**

*Allergy Service, Department of Dermatology, and the
Clinical Investigation Center, Naval REgional Medical
Center, San Diego, California.

**From the Division of Allergy and Immunology, Scripps
Clinic and Research Foundation, La Jolla, California.

Supported by NIH

and by the

Bureau of Med. Surg. CI # 5-16-631PS (use standard identifying data)

The opinions and assertions contained herein are those
of the authors and are not to be construed as official
or necessarily reflecting the views of the Navy Depart-
ment or the naval service at large.

ENCLOSURE(19)

INTRODUCTION

Urticaria and angioedema are relatively common disorders. Approximately 20 percent of the general population may experience at least one episode during their lifetime. These diseases are considered together since they are believed to have a common pathogenesis. Acute urticaria may represent an immediate type hypersensitivity reaction, is self-limiting, and, therefore, its symptoms are often of little concern to most patients. () Chronic urticaria on the other hand, may be disabling. It is generally felt that the longer the duration of symptoms, the more difficult the diagnosis. ()

Various pharmacologically active agents such as histamine, serotonin, and the vasoactive peptides are considered pathogenic factors in the mechanism of angioedema or urticaria.

Urticaria may be defined as immunologic in origin when the specific reactants (i.e., antigen and antibody) or specifically sensitized cells have been identified.

A high percentage of patients with chronic urticaria have developed these symptoms following ingestion of aspirin, other drugs, food, molds, and other allergens. Many disease states have been listed as causing chronic urticaria such as focal infection, neoplasms, and ~~autoimmune disease~~. There is no well-documented evidence, however, that ~~all~~ of these diseases are responsible for the urticaria but could be associated by chance.

ENCLOSURE(19)

Urticaria can be a manifestation of various chronic immunological diseases such as systemic lupus erythematosus, hepatitis involving HBAg, serum sickness, and disorders involving nonspecific aggregates of protein (cryoglobulins, cold agglutinins, and aggregate gamma globulins). Some of these disorders are associated with circulating immune complexes or cytotoxic antibodies which are able to activate the coagulation, complement, or kinin systems. These, in turn, contribute to urticaria production by anaphylatoxin production with the activation of mast cells, leucocytes, or platelets, and the release of mediators of anaphylaxis (E.G., histamine, SRS-A, and others).

During comprehensive evaluation of several patients with chronic idiopathic urticaria, we observed the presence of isolated complement abnormalities, not associated with diseases or conditions, that might explain these findings.

MATERIALS AND METHODS

Subjects. Ten patients out of a clinic population of 65 with chronic idiopathic urticaria were studied. All the patients were randomly chosen and, arbitrarily, were considered to have chronic urticaria if it persisted steadily or recurred episodically for at least six weeks. A complete history, physical examination, and various stimulation tests when appropriate (e.g., ice, heat, stroking, pressure, and vibration) were performed to obtain an initial data base and to screen all patients.

Laboratory studies. Laboratory studies obtained in each patient included the following: complete blood count and differential (CBC), erythrocyte sedimentation rate (ESR), urinalysis, stool for ova and parasites, T4 by radioimmunoassay, SMA-6, and SMA-12 (sodium, potassium, chloride, CO₂) BUN, glucose, total protein, albumin, calcium, inorganic phosphorus, cholesterol, uric acid, creatinine, total bilirubin, alkaline phosphatase, creatinophosphokinase, lacticdehydrogenase, and serum glutamic aloacetic transaminase (SGOT), both by Technicon autoanalyzer, chest, and sinus x-rays. Also, nose and throat cultures as well as urine cultures were obtained when indicated.

Measurement of complement components. Whole serum complement activity, CH50, was measured as described. () Effective molecule titration with cellular intermediate complexes EAC 1,4 and EAC 1,4 oxy 2 () were used to measure C2 and C3 hemolytically. Clq, () Cls, () ClsI, () C4, () C3, () C3bI (kindly supplied by Dr. E. H. Vallota, Children's Hospital, Cincinnati, Ohio), C5, () C9, () and factor B () were measured immunochemically by radial immunodiffusion. In most patients, complement studies were repeated when possible to ascertain any serial changes.

Activation of the alternative pathway was studied by incubation of the patient's serum with normal human serum in presence of glutathione-sensitized human erythrocytes (GSHE). After 60 min at 37°C, the amount of lysis was quantitated spectrophotometrically at 412 nm. () In addition, incubation of the