Topical Immunoglobulin G in Atopic Dermatitis

A.	Anna	Burek-Kozłowska ^a
A.	Andreas	Morell ^a
T.	Thomas	Hunziker ^b

^aCentral Laboratory, Blood Transfusion Service, Swiss Red Cross, Bern;

^bDermatological Clinic, University of Bern, Switzerland

Correspondence to: Dr. Anna Burek-Kozłowska, Central Laboratory, Blood Transfusion Service, Swiss Red Cross, Wankdorfstrasse 10, CH-3000 Bern 22 (Switzerland)

Dear Sir,

Despite decades of extensive research, the primary pathogenesis of atopic dermatitis remains elusive. However, there is evidence that immune mechanisms play an important role, since immune functions such as antigen presentation, macrophage activation, and immunoglobulin and cytokine production as well as many others are disturbed. Patients with atopic dermatitis exhibit a poor handling of bacterial, viral, and

fungal infections, and they often have exacerbations associated with *Staphylococcus aureus* infection of the skin [1]. Immunoglobulin G (IgG) preparations contain specific antimicrobial antibodies with neutralizing and opsonizing activity [2]. A number of such preparations have been shown to have an excellent opsonic activity against *S. aureus*. Moreover, they may have immunomodulatory properties by interfering with cellular li-

This work was supported by the Central Laboratory, Blood Transfusion Service, Swiss Red Cross, Bern, Switzerland.

© 1994 S.KargerAG, Basel

1018-2438/94/1041-0104

\$5.00/0

gand structures or by affecting cytokine production [3,4].

We have tried to apply these two different mechanisms of action to the treatment of atopic dermatitis. Between October 1990 and November 1991, 6 patients (age range 20-67 years, 2 females and 4 males) hospitalized at the Dermatological Clinic in Bern because of recalcitrant widespread subacute or chronic atopic dermatitis were enrolled in an open-label pilot trial to study the effect of topical IgG. The preparation was an aqueous 17% sterile human IgG solution in 12% sucrose, treated with pH4/pepsin (manufactured at the Central Laboratory of the Swiss Red Cross). Similarly affected bilateral skin lesions of about 3 cm in diameter were selected on the limbs in each patient. The treatment consisted of application of the IgG solution to the study area and of halogenated topical corticosteroids of class II or III [5] to the corresponding control area on the other limb, each covered by nonocclusive dressings, once daily for 9 days. No systemic therapy was allowed during the trial. The effects of both therapies, as well as side effects such as skin irritation, were recorded on days 3, 6, and 9. Photographic documentation of study and control areas was performed at the beginning and at the end of the trial (fig. 1). The responses to treatment are summarized in table 1. Compared with corticosteroids, the

+ + + +

+ +/+ + + + + + + + + + + + + + + +

+ +

popliteal fossa heel

antecubital fossa antecubital fossa popliteal fossa antecubital fossa

Improvement: + = slight; ++ = moderate; + + + = significant.

We think that this activity was due to the presence of antibacterial antibodies in the preparation which might interfere with bacterial colonization or even with immunological reactions in the skin lesions. Thus, further, placebo-controlled, studies in larger groups of patients treated over a longer period of time would be worthwhile.

short-term efficacy of IgG was superior in 2, similar in 3, and inferior in 1 patient. The improvement mainly concerned the inflammatory skin reaction, whereas lichenification was hardly reduced. Side effects of the IgG solution were not observed.

In conclusion, topical therapy of atopic dermatitis with IgG shows beneficial effects.

Fig. 1. Topical IgG in atopic dermatitis. a Left heel (control area) before topical corticosteroids. b Left heel (control area) after 9 days of topical corticosteroids. c Right heel (study area) before topical IgG. d Right heel (study area) after 9 days of topical IgG.

105

Cooper KD: Pathogenesis and pharmacology of atopic dermatitis; in Czernielewski JM (ed): Immunological and Pharmacological Aspects of Atopic and Contact Eczema. Basel, Karger, 1991, pp 119-127.

van Furth R, Braat AGP, Leijh PCJ, Gardi A: Opsonic and physicochemical characteristics of intravenous immunoglobulin preparations. Vox Sang 1987;53:70-75.

Dwyer JM: Manipulating the immune system with immune globulin. N Engl J Med 1992; 326:107-116.

Andersson JP, Andersson UG: Human intravenous immunoglobulin modulates monokine production in vitro. Immunology 1990;71:372-376.

Schmidli J, Hunziker T: Kortikosteroide zur lokalen Anwendung auf der Haut. Pharma-Kritik 1988;10:65-72.

Burek-Kozłowska/Morell/Hunziker Topical Immunoglobulin G in Atopic Dermatitis