Skin Collagen and Thickness in Women with Hirsuties

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Summary: Total skin collagen is greatly increased in women with hirsuties. This is presumably due to androgen, whether locally produced or circulating.

Introduction

We have long suspected that patients with hirsuties have a thickened skin. Since we have shown that skin thickness and skin collagen are directly related (Black et al., 1970a) we measured both skin thickness and total skin collagen content in patients with hirsuties.

Methods

The patients were all women with hirsuties aged from 17 to 38 years. Eight had the Stein-Leventhal syndrome and in 18 the hirsuties was "idiopathic." Skin thickness was measured in all 26 patients by the radiographic method of Meema et al. (1964) as modified by Black (1969). The results were age-matched and compared with our data for 107 normal women (to be published). Total skin collagen was measured in 25 of the patients by the method of Shuster and Bottoms (1963a) as follows: Skin biopsy specimens were taken from the midpoint of the extensor aspect of the forearm with a high-speed rotary punch of 5mm. diameter. The specimens were defatted in acetone and then dried to constant weight. After hydrolysis the hydroxyproline content was measured by the method of Woessner (1961). Skin collagen calculated from the hydroxyproline content was expressed in relation to the surface area of the skin biopsy, since this has been shown to be the most satisfactory way to measure total skin collagen (Shuster and Bottoms, 1963a; Shuster et al., 1967a, 1967b). The skin collagen contents of the 25 patients studied were age-matched and compared with the results from 62 normal women, which include our previously published normal data (Shuster and Bottoms, 1963a; Shuster et al., 1967a 1967b).

Results

There is a considerable increase in total skin collagen (Fig. 1). Collagen per fat-free dry weight was also increased, but to a much lesser extent. Skin thickness was increased considerably in some subjects, but taking the group as a whole this increase was not statistically significant. The increase in collagen density (collagen/thickness, Fig. 1) was therefore due to the increased total collagen content of the biopsies.

Discussion

Despite the clinical hunch which led to this study, skin thickness was not found to be increased in the group as a whole, though it was greatly increased in a few individuals with hirsuties. There are four possible explanations for this: (1) the few who did have a great increase in skin thickness (Fig. 1) made a great impression on us; (2) there may be increased tethering of skin to deeper structures in hirsuties (this occurs in systemic sclerosis, for example, when it gives a false clinical impression of thickness (Black et al., 1970b)); (3) increased density of collagen and consequent "hardness" may have been interpreted as thickness; and (4) we were wrong.

REFERENCES


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