KELOID AND SELF ADMINISTRATION OF ADRENALINE

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THE etiology of Keloid formation of the skin is unknown, but the condition is common enough in everyday practice, in association with burns, scalds, vaccination, scars, etc.

The development of this curious change would appear to be the result of an individual skin characteristic, and not one that is dependant upon any known bodily state. A tuberculous diathesis was at one time promulgated but is now regarded as not only unlikely but as having nothing to support it. There is no relationship between the size of the original scar and the onset of a Keloid because the change is known to appear after trivial injuries such as pin pricks and insect bites. This being so it might be expected that Keloids would be fairly frequent in people who undertake the self administration of insulin, adrenaline or use a syringe in drug addiction. If the change does arise frequently, under such circumstances, it would seem that little attention has been drawn to it, and for this reason the following case is thought to be worth placing on record.

History.—A girl of 19 years was admitted to hospital on 10.6.51, with a history of having suffered from asthma since the age of four. Her attendance at school had always been very irregular owing to the frequency of the paroxysms and she had finished schooling at thirteen. She was unable to follow any employment after leaving school, but had taken part in the housework, at home, under her mother's guidance.

At the age of fifteen the attacks of asthma started to become " really bad " and two years later it was found that the only thing that could control them was an injection of adrenaline. As many other forms of oral and inhalation therapy had been tried without avail she was accordingly instructed, at this time, how to give herself injections of this drug. The attacks were so frequent and prolonged that on many occasions she had recourse to give herself seven or eight injections in the day, averaging, in amount, anything between $\frac{1}{2}$ and 1 c.c.

Six months after she started giving herself the injections she noticed that scars were beginning to form on both her upper arms at the places where she was inserting the needle.

The scars were never painful or itchy and she could force the hypodermic needle through them without any undue discomfort, but she made it a practice, when she remembered, to inject the adrenaline at their edges. When she found that the scars on her arms were increasing in size she began giving herself the injections into the fronts of her thighs, but as this brought about a similar reaction

she quickly desisted from using these areas. She then tried injecting the skin on the front of the abdomen but soon realised that the same change was prone to take place there.

The patient stated that both syringe and needle, which she used, were kept submerged in surgical spirit, and that they were carefully boiled for twenty minutes before use.

There was no known precipitating factor for her attacks, her paternal grandmother was, however, reputed to have been an asthmatic for many years, and one of her brothers had much wheezing in his chest at times associated with " hay fever."

Clinical Examination.—Pale young woman, mouth-breather with typical asthmatic type of wheezing. No finger beaking. Occasional cough with very little sticky mucoid sputum. Heart sounds normal, pulse rate 92 per minute B.P. 118-78.

On the upper lateral aspects of both arms were raised, red, ugly looking irregular Keloids, measuring 9 cm. long by 4 cm. broad which were not tender to touch. Similar smaller areas of scarring were present on the inner side of the thighs, also two small patches on the lower abdomen. No associated glandular enlargement was noted. It was observed that there was a small well-healed scar on the back of the left hand, resulting from some minor injury but which did not show Keloid change. No other bodily scars were noted.

Special Investigations.—Blood examination—Hb. 95 per cent., eosinophils 15 per cent., B.S.R. 9 mm. plasma in first hour. X-ray—increased broncho-vascular markings and emphysema. Right maxillary antrum slight opacity. Sputum—small number of mixed organisms, the predominant type being pneumococci (penicillin sensitive). There were numerous polymorphs, many autolytic and the proportion of eosinophils was high, about 25 per cent. Five specimens were negative for M. tuberculosis. Fasting gastric juice—two samples negative for M. tuberculosis. Cultures of above—negative for tubercle. Mantoux test—negative. E.C.G.—normal. Blood sugar curve—normal. Skin sensitivity tests gave positive reactions to fish, cereals and pollen B. A culture plate was inoculated with the hypodermic needle that was used by the patient and this gave no growth except for a few colonies of *Staphylococcus albus* and *Micrococcus tetragenus*.

A biopsy specimen was taken from the Keloid and adjacent normal dermis on the left upper arm. The microscopic report on this (Dr Robertson Ogilvie) was :—

" Marked overgrowth of fibrous tissue in the subcutaneous region. The new tissue is disposed in more or less contiguous oval masses and is therein made up of interlacing fasciculi of moderately cellular and highly collagenous substance.

" Off-shoots extend into the underlying fat. The fibrous region is supplied by fairly plentiful vessels grading from capillaries to small sinuses and many of them show cuffing with round cells and some siderophages. Hair follicles sebaceous and sweat glands are absent.

FIG. 1.

FIG. 2.

The overlying skin is about average thickness, but has an unusually flattened appearance compared with the neighbouring epidermis presumably due to subjacent pressure. The features of the specimen are those of a Keloid."

Although the patient had no real need to have a bronchodilator while in hospital, she was asked to demonstrate her method of giving herself adrenaline. This she did remarkably well, but it was noticed that after she had given herself two small injections in the left forearm that a small hard lump was forming which would no doubt have become a Keloid had she continued.

Advice was sought regarding the advisability of X-ray therapy for the Keloids, but it was not thought likely that this would help.

Summary.—The details of an unusual case of Keloid arising as the result of the self administration of adrenaline for asthma are recorded.

There did not appear to be a tuberculous diathesis present and the condition was presumably a personal skin characteristic.

The cause was undoubtedly trauma to the epidermis with a hypodermic needle.

No record of a similar case can be traced in the literature.

Senior colleagues on the hospital staff who had many years experience of seeing both asthmatic and dermatological problems expressed the opinion that the case was unique.

I am indebted to Dr James K. Slater for permission to publish this case from his ward.