seems unlikely in view of the patient's age, the symmetrical involvement, and the severity of the subjective manifestations in contrast with the paucity of the objective findings.

RAYMOND COLL, M.B., B.CH.,
ISRAEL HORNER, M.B., B.CH.,

Residents in Medicine, Department of Internal Medicine,
Tel-Aviv University Medical School and Tel-
Hashomer Hospital, Israel.

Urticaria after Insertion of Smith-Petersen Vitallium Nail

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The cause of chronic urticaria is usually elusive. The following case report suggests that the nickel contained in a cast cobalt-chromium alloy (Vitallium) was responsible for symptoms of immediate type allergy.

CASE REPORT

On 11 January 1965 a woman of 65 sustained a fracture of the right femoral neck. The next day a Smith-Petersen Vitallium nail was inserted under halothane anaesthesia. On the day after operation pruritus and generalized urticaria developed, and these symptoms persisted for the next 10 months. During this time there was radiological healing of her fracture, but there was little weight-bearing on the limb on account of anginal congestive cardiac failure and three episodes of cerebral thrombosis. A right-sided hemiplegia followed one of these strokes.

On 8 December she was admitted to the Norfolk and Norwich Hospital for investigation of urticaria. Her major physical findings were right-sided flaccid hemiplegia, generalized urticaria, and dermatographism. Laboratory findings were as follows: haemoglobin 13.4 g./100 ml.; W.B.C. 5,600/cu. mm. (neutrophils 70%, lymphocytes 22%, monocytes 5%, eosinophils 3%); E.S.R. 11 mm. in one hour (Westergren); direct Coombs test negative; blood urea 25 mg./100 ml.; total serum proteins 6.62 g./100 ml. (albumin 4.6 g., globulin 2.02 g.). X-ray picture of chest and urinalysis were normal.

Discontinuation of current treatment (barbiturates, digitalis, and diuretics) produced no lessening of urticaria, and challenge with the drugs she had received before operation—Omnopon and scopolamine—led to no exacerbation. Routine patch testing showed an eczematous response to a solution of 2% nickel sulphate at 48 hours. A similar response was produced by a Vitallium nail strapped to the thigh for 48 hours. During patch testing there was no increase in severity of urticaria, but severe non-eczematous periorbital oedema developed at 48 hours and resolved within the following 12 hours. A scratch test with 2% nickel sulphate solution resulted in an itching weal (3 cm.) at 10 minutes, and was associated with patchy erythema and swelling of the same forearm for one hour. A passive transfer (Prausnitz-Küstner) test performed on a volunteer was positive. Patch and scratch tests with the other constituents of a Vitallium nail were negative.

Since the patient was bedfast and her fracture had healed clinically, the nail was removed on 10 January 1966 under local anaesthesia. Within 24 hours spontaneous urticaria resolved but dermatographism persisted. Exquisite and troublesome dermatographism was still present one year after removal of the nail.

COMMENT

At first this patient's urticaria was thought to represent an allergic reaction to drugs given postoperatively. It was she

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who, for the wrong reason, suggested the correct line of investigation. She reported that during early married life she was said to be "metal sensitive," and that reports about her had appeared in the *British Medical Journal* and the daily press. A search through the *British Medical Journal* of the 1930s showed that she was referred to in a "Queries and Answer" series under the heading of "The Sympathetic Ring" (Jones, 1936). Her practitioner questioned the mechanism involved when the patient's gold ring became the colour of platinum when on her finger but reverted to a golden colour when placed on the mantelshelf overnight. Subsequent editorial comment (*Brit. med. J.*, 1936) summarized correspondence which suggested contact with mercury contained in soaps, ointments, and lotions. The patient had noted no skin change under her ring or other metal object.

Classically, the separate nature of immediate and delayed type allergy has been stressed. However, clinical experience and various reports in the literature suggest that these two types of allergy may exist in the same individual. Calnan (1956) noted the presence of urticaria in his series of nickel-sensitive patients, and Stoddart (1960) reported the case of a patient with delayed contact sensitivity to nickel who developed anaphylaxis after transfusion through a nickel-plated cannula. Shelley and Resnik (1965) studied seven patients with poison ivy dermatitis, and, in addition to showing skin sensitivity to poison ivy oleoresin ether extract, the patients showed the morphological change of basophil degranulation when challenged with poison ivy extract orally. Basophil degranulation in vivo and in vitro occurs during immediate type hypersensitivity (Shelley and Caro, 1962).

We are unable to date the onset of this patient's cutaneous sensitivity to nickel. She had noted no eruption under metal clips, buckles, suspenders, etc. We have concluded that delayed and immediate type antibodies existed, and that the latter reacted with nickel absorbed from the Vitallium nail. Her immediate freedom from urticaria after removal of the nail was dramatic, but the continuation of dermatographism has been a disappointment.

We are indebted to Mr. A. W. Laxen, of the London Splint Company Ltd., for the composition of the alloy whose trade name is Vitallium (chromium 27–30%, molybdenum 5–7%, iron 0.75%, carbon 0.5%, nickel 1%, silicon 1%, manganese 1%, cobalt balance).

A. W. MCKENZIE, M.B., M.R.C.P.,
C. V. E. AITKEN, M.B., B.S.,
Skin Department, Norfolk and Norwich Hospital.
R. RIDSDILL-SMITH, M.B., B.CHIR.,
General Practitioner, Norwich.

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