promote an exacerbation of a quiescent arthritis. Simple trauma is sufficient to fracture the atrophied bones of the rheumatoid patient. Limitation of motion or ankylosis of joints need not occur if proper precautions are used. In osteo-arthritis fractures are usually produced by major trauma that would be sufficient to produce a fracture in normal bone.

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GOUT AND MALE PSEUDOHERMAPHRODISM: REPORT OF A CASE*

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THE curious fact that gout occurs predominantly among men was known to Hippocrates, and records indicate that throughout the twenty-four centuries that have elapsed since his time, women have for the most part continued to escape this painful malady. In the twenty-ninth aphorism of Hippocrates, according to Adams, it was stated that "a woman does not take the gout unless her menses be stopped," and in 1851 Gairdner wrote in a textbook on gout that "... women, though not wholly exempted from attacks of gout, do, notwithstanding, enjoy a greater comparative immunity." Similar observations have been made by many others since Gairdner's time. Practically every modern American authority on gout has observed that there is a predominance of the disease among men, although the exact ratio has varied in different reports. In a series of thirty-six cases reported by Fitcher in 1902, all the patients were men, and Hench^{6,7,8} has repeatedly stated that 98 per cent. of patients who have gout are men. Other American series in which a predominance of the disease among men is noted include those of Williamson (116 cases, one female), Schnitker and Richter (fifty-five cases, four females), Kinell and Haden (135 cases, five women) and Cohen (forty-seven cases, three women). In England, France

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and Germany gout also seems to occur mostly among men.^{11, 12} Thus, many statistics tend to bear out the warning of Hench^{6, 7, 8} that a diagnosis of gout must be made for a woman only with caution, and that such a diagnosis must be based on the same requirements as would apply if the diagnosis were being made for a man.

Female immunity to gout is unexplained. It was attributed by Hippocrates to the "purifying" effect of the menses, and by Gairdner to the greater "purity and propriety" of women's lives. To this day, no better explanations than these are available, however unsatisfactory they may be.

Men deprived of their gonads have been thought to share the immunity of women to gout. At least, in Hippocrates' day, it was said that eunuchs "did not take the gout nor become bald."¹ About six hundred years later, Galen spoke of this apparent immunity of eunuchs to gout as resulting from a change to a cold temperament like that of women. He noted, however, that those eunuchs who fell into "sloth and intemperance" were likely to acquire the disease.

Nowhere in medical literature have I encountered a case resembling that of this report, a case in which a patient had both the developmental fault of male pseudohermaphroditism and the metabolic fault of gout.

REPORT OF A CASE

The patient, fifty-five years old, came to the Mayo Clinic in April of 1939, complaining of recurring attacks of painful swelling affecting the "bunion joints." A diagnosis of gout had been made by the patient's physician at home. There was no familial history of gout, but the history in other respects was of interest. The patient, an Egyptian, had always been aware that her genitalia were abnormal. (I shall refer to this patient as a "female" because she had always looked on herself as being a woman.) She had never menstruated, and had not married, but had always dressed in women's clothes and had worn her hair long. She had been forced of necessity to wear men's shoes because of her large feet.

She had been obese even during childhood, and at the age of fifteen years weighed 226 pounds (102.7 kg.). She weighed 232 pounds (105.4 kg.) on admission to the clinic. A friend described the patient as "an excellent cook." She had always eaten heartily, had taken meat once or twice daily, and often had entertained her friends with huge meals, the main course of which consisted of chicken, turkey, lamb and

other meats, all cooked in butter and served with rice, beans and nuts. For twenty years she had been accustomed to take large quantities of alcoholic liquors, and often had taken a pint of whisky daily.

At the age of thirty-five years, twenty years before her visit to the clinic, she had suddenly been afflicted by swelling with severe throbbing pain in the region of the attachment of the right Achilles tendon. This attack lasted two weeks and then the condition of the foot returned to normal. Her physician at home had made a diagnosis of gout during this attack and had treated the foot with applications of heat, but had suggested no further treatment.

One year later, a similar acute attack of violent pain and swelling had developed in the region of the right big toe, and had persisted for ten days, after which the foot again returned to normal. Since that time she had experienced similar episodes once or twice yearly; the region of one or the other "bunion joint" was affected, and the attacks lasted for from three or four days to ten days in some attacks. Such attacks often followed a day of excessive eating and drinking, and seemed to have no definite seasonal incidence. The longest interval which had elapsed between attacks was eighteen months; the shortest was four months. Usually the attacks appeared suddenly over the course of two or three hours, caused throbbing, intense pain which was equally severe day and night, and which was associated with swelling and redness over the joint involved. Usually, severe sensitiveness was present which made it impossible for the patient to keep the foot covered because even the weight of bed-clothes was too much for her to bear. Fever did not accompany the attacks, and the attacks always disappeared, leaving the feet painless. The most recent attack had appeared in the right "bunion joint" ten days before the patient had come to the clinic.

She never had experienced renal colic and had had no attacks of olecranon bursitis. One year before coming to the clinic her physician at home had discovered albumin in the urine.

Examination disclosed the patient to be obese, 5 feet 6½ inches (169 cm.) in height, heavily built, with broad shoulders and narrow hips. The voice was deep and of masculine timbre. There was a moderate amount of hair on the chin. The breasts were small, and the abdomen was obese and hung down over the pubes as an apron. The pubic hair had the feminine distribution. The labia majora were large and contained soft masses which felt like testes; the mass on the right was placed lower in the labium than that on the left. The clitoris was 2 inches (5 cm.) in length, flaccid and had a well-developed glans. There was no vagina; instead, there was merely a small invagination behind the urethra in the region of the introitus (Fig. 1). An attempt to palpate the pelvic organs by rectum was unsatisfactory because of the patient's obesity.

At the time of the first examination the patient's blood pressure was 215, systolic, and 110, diastolic, expressed in millimetres of mercury. At examination the subsequent day the blood pressure was 180, systolic, and 100, diastolic, expressed in millimetres of mercury. The right "bunion joint" was moderately swollen, red and markedly tender, particularly over the medial aspect. There were no subcutaneous tophi and no other joints were affected. Examination of the optic fundi showed sclerotic, narrowed retinal arterioles similar to the retinal arterioles in hypertension and dot-like regions about both

FIG. 1.

The clitoris is two inches in length and has a well-developed glans. Only a small pit behind the urethra marks the site of the vagina. No free vaginal canal is present.

maculæ which appeared to be the residual effects of previous "œdema exudates." A small region of hæmorrhage was noted below the left macula.

A single specimen of urine contained albumin (3 plus), with casts and occasional erythrocytes. Results of blood counts and estimation of hæmoglobin were normal and the result of a flocculation test for syphilis was negative. Values for uric acid were 5.1 mg. per 100 c.c. of whole blood (normal 2 to 2.5 mg.) and 7.9 mg. per 100 c.c. of serum (normal under 6 mg.). The value for urea in the blood was 46.0 mg.

per 100 c.c. (normal under 40 mg.), and the result of the urea clearance test was 27.3 c.c. (normal 40 c.c.) with a urine volume of 47 c.c. in one hour.

Roentgenograms of the right foot showed a spur to be present at the site of attachment of the Achilles tendon, on the posterior inferior aspect of the cuboid bone, and on the medial aspect of the distal phalanx of the great toe. These probably represented unrelated osteoarthritis. Slight roughening was noted on the medial side of the head of the first metatarsal bone (Fig. 2), suggestive of the presence of gouty tophi. Roentgenograms of the left foot demonstrated a more advanced

FIG. 2.—ROENTGENOGRAMS OF THE LEFT (a) AND RIGHT (b) FEET, SHOWING DESTRUCTIVE CHANGES ABOUT THE HEAD OF THE FIRST METATARSAL BONES CHARACTERISTIC OF OSSEOUS TOPHI.

The process is far more advanced in the right foot than it is in the left.

destructive change, characteristic of gouty tophi affecting the head of the first metatarsal bone.

A twenty-four-hour specimen of urine examined for androgens by the method of Drips and Osterberg gave a reaction equivalent to a concentration of 2 to 8 mg. of androsterone (usual findings for women, 1 to 4 mg.; for men, 2 to 8 mg.).

On the basis of the classic history of recurring acute attacks of arthritis affecting the feet, with complete remissions between these episodes, an elevated value for uric acid in the blood, and roentgenographic evidence very suggestive of gouty arthritis, the diagnosis of acute recurrent gouty arthritis was made.

COMMENT

This patient presented features of both sexes. She was like a male in that her shoulders were broad and her hips were narrow; the voice was coarse, a beard was present, the breasts were underdeveloped and the daily excretion of androgens was high. The patient resembled a woman in personality, in distribution of pubic hair and, to some extent, in the external appearance of the genitalia. The fact that gout developed would tend to suggest that constitutionally the patient was predominantly male.

SUMMARY

A case is reported in which a patient with bisexual genitalia, male configuration of the body, but with a predominantly female personality, suffered from characteristic attacks of acute gouty arthritis and also severe hypertension.

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