THYROID ACROPACHY

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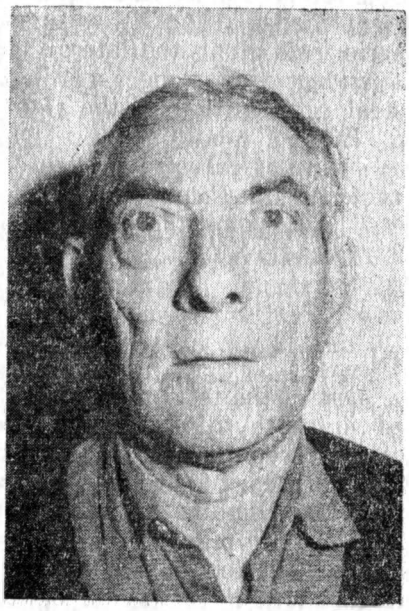
Thyroid acropachy is a rare and unusual complication of thyrotoxicosis. According to Gimlette (6), this condition is observed only in 1% of the patients with thyrotoxicosis. Kinsella (7) claims that it is met with more rarely than the combination thyrotoxicosis with exophthalmos and localized myxedema.

The term acropachy derives from the Greek word designating thickening of the limbs and was introduced for the first time by Högler (cited by 7, 11) in 1920, during the investigation of secondary osteoarthropathies. The secondary periosteal proliferation in thyrotoxicosis was described by Thomas (cited by 11) in 1933 and was thereby coined with the term thyroid acropachy. Since the latter report, about 38 additional cases were published in the pertinent literature (1, 7).



The limited number of cases described hitherto, on the one hand, and more particularly, the course run by thyrotoxicosis in one of our patients, associated with exophthalmos, drumstick fingers and hypertrophic osteoarthropathy without localized myxedema, on the other, was the reason for submitting the case report for publication.

Case report: K. P. S., case history No. 1344/17. 6. 1966 — Therapeutic Clinic, Higher Medical Institute — Varna; A male patient is concerned, aged 61 falling ill in 1965 with feebleness, irritability, agitated sleep, tremor of the hands, abundant perspiration and constant feeling of heat, tachycardia (palpitation,), protrusion of the eyeballs and double vision. He was subjected to treatment with ^{131}iodine at the Postgraduate Medical Institute with ensuing deterioration of the condition. The treatment course with thyrostatics, carried out subsequently at our clinic, brought about the stabilization of his conditions.

No evidence for thyrotoxicosis or drumstick fingers was found in the familial history.

Objective investigation data: the skin is humid, warm and soft. Enlargement of the thyroid gland, II degree, with a nodose formation, the size of a hazelnut in the right lobe, with dense-elastic consistency free of pains and adherent to the underlying tissue. Pronounced exophthalmos, mostly on the rightside (exophthalmometry: left eyeball 21 mm, right — 23 mm). Glittering sight, positive symptoms of Graefen, Stelwag and Dalrymple. Rhythmic heart activity, clear heart sounds. Blood pressure 120/60 mm mercury column. Subfebrility. Drumstick fingers of the hand and feet.

From the laboratory investigations: Hb 84%, leukocytes 5100, differ. blood picture — segm. 70%, eosin 2%, bas. 1%, mon. 7%, lymph. 20%. Erythrocyte sedimentation 12/15 mm according to Westergreen. Urine — within normal limits. Hepatic tests — Weltmann 7 test-tubes, thymol turbidity test 9 PhU, creatinine 1 mg %, glucose loading — normal blood sugar curve. Proteinogram: total protein 7.35%, alb 45%, globulins: $alpha_1$ — 8%, $alpha_2$ — 12%, beta — 15%, gamma — 20%. Cholesterol 176 mg %.

X-ray study of the lungs (including bronchography), cardiovascular system, gastrointestinal tract, and cella turcica did not disclose pathological changes. The X-ray investigation of the bones revealed thin layered periostosis along the lateral aspects of tibia and fibula, bilaterally, with a tendency for stronger manifestation in the midshaft area and initial periosteal proliferation of the right fifth metacarpal ray radialwards.

ECG, eye bottoms and UNG — within normal limits.

Neurological status — evidence for vegetative-dystonic syndrome connected with the basic affection.

The karyologic investigation of the patient disclosed normal karyotype — $2n=46(44+XY)$.

Discussion

Out of the total number of 38 patients (1, 8, 10, 11) with active or treated hyperthyroidism, exophthalmos, drumstick fingers and hypertrophic osteoarthropathy published hitherto, 35 are with clearly outlined, localized myxedema and only 3 are without localized myxodema phenomena, revealing combination of hyperthyroidism exophthalmos, drumstick fingers and hypertrophic osteoarthropathy. The case described here represents a rare association of radioactive ^{131}iodine treated thyrotoxicosis, drumstick fingers and hypertrophic osteoarthropathy. The meticulous investigation of the lungs, cardiovascular system, gastro-intestinal tract and the other organs and systems discards the possibility of secondary hypertrophic osteoarthropathy of a different origin.

The thyroid acropachy is manifested in patients, undergoing surgical or ^{131}iodine treatment, and not in patients treated with thyreostatics (7), as in our case. According to Malkinson (10), the syndrome is more frequently encountered in females, whereas other authors (3, 7, 9, 11) state that the two sexes are approximately equally affected. The absence of painfulness, burning sensation and sweating of the limbs in our patient meets the already described clinical characteristic features of thyroid acropachy, unlike secondary hypertrophic osteoarthropathy in which the above findings are characteristic (10).

The bone changes constitute an essential feature in the case described. Many authors (4, 7, 8, 10, 11, 13) point out that in hypertrophic osteoarthropathy of classical type, thin-layered subperiosteal bone is noted with involvement mainly of the tubular bones. Regardless of the fact that similar diffuse changes may be observed in thyroid acropachy, the well differentiated «subperiosteal blebs» exhibiting varying roentgen density, constitute a characteristic finding. Changes of this type are mainly related to the metacarpal, metatarsal and interphalangeal bones of the hands and feet. The thin-layered periosteal proliferation, involving the fibulae and tibiae in our case, is characteristic of the classical hypertrophic osteoarthropathy, but its lateral location with a tendency for a more clearcut manifestation in the midshaft areas, as well as the initial radial periosteal proliferation of the fifth metacarpal ray classifies the X-ray changes among those characteristic of the typical acropachy. It is difficult to find an explanation of this peculiarity, i. e. the incorporation of elements of both periostosis types; hence, it is referred to as an interesting fact merely.

The pathogenesis of the affection is not known. In the opinion of certain writers, the development of osteoarthropathy depends on circulatory disorders, venous stasis and tissue hypoxia of the limbs. Thomas (cited by 7) presumes that the changes from relatively high blood flow in hyperthyroidism, to reduced rate of perfusion in hyperthyroid conditions play a definite role in this respect. Such a concept is corroborated, in the case reported, by the periostosis of the legs, whereas the pronounced drumstick alteration of the upper-limb fingers is in discrepancy with the same.

If judging by the strict symmetry of periostosis proliferation, the probable participation of neurogenic factors would also be possible.

A fact worth of interest is the finding of eosinophilic adenoma and eosinophilia of the hypophysis in two cases with the above syndrome, warranting the assumption that the hypophyseal factor is also responsible (7). Probably, the hypophyseo-diencephalic genesis of the disease has still greater right for existence (2, 3, 5, 7). The probably existent dysfunction of the hypothalamo-hypophyseal system at the time of operation of thyrotoxicosis patients, leads to gross postoperative reaction on the part of the hypophysis, presenting as hormonal equilibrium disturbance, and by way of the «feed-back» mechanism — to overproduction of thyrotropic and somatotropic hormone (3).

The thyrocalciothonine, accounting for reduction of the serum calcium and rise of the calcium content in the bones may be possibly endowed with properties which could be related to the periosteal proliferation, but any way, no proves are available (7).

The autoimmune genesis should be also considered in the pathogenesis of the syndrome, especially when bearing in mind that in most of the patients LATS was present, but here further observations are required.

In the case reported it is rather difficult to refer the affection to a definite, single pathogenetic hypothesis. The case is presented as an interesting peculiarity of a rare syndrome.

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ТИРОИДНАЯ АКРОПАХИЯ

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РЕЗЮМЕ

Описывается больной тиреотоксикозом с экзофтальмом, барабанными пальцами и гипертрофической остеоартропатией.

До настоящего времени в литературе описано лишь 38 случаев гипертиреоидизма, барабанных пальцев, гипертрофической остеоартропатии и локализованной микседемы и лишь 3 случая гипертиреоидизма, барабанных пальцев и гипертрофической остеоартропатии без локализованной микседемы. Описанный автором случай представляет интересную особенность редкого синдрома.

Периостоз у описанного больного включает как элементы тироидной акропахии, так и классического типа вторичной гипертрофической остеоартропатии, в то время как токовая отсутствует.

Цитогенетическое изучение показывает нормальный кариотип.

Патогенез страдания неизвестен.