The Radiological Features of Alcoholic Ulcero-osteolytic Neuropathy in Blacks

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SUMMARY

The radiological features in the bones and the angiographic changes in the vessels of the lower limbs of 15 chronic alcoholic men are discussed. The distal arteries demonstrate the features of neovascularization. Infective and resorptive changes in the bones of the forefeet are described. These features are related to chronic infection or to the toxic effects of the alcohol.


A neurotrophic ulcero-osteolytic process has been described in the feet of Black alcoholics. The aetiology of this condition is usually related to chronic alcoholism. In this study we investigated the bone and vascular changes found in the lower limbs of patients with this condition.

PATIENTS AND METHODS

All patients with the disease admitted to one of the five surgical units at Baragwanath Hospital during the period June 1976 to July 1977 were investigated. There were 15 patients, all males, with a mean age of 43.4 years (range 25 - 75 years). All gave a history of excessive alcohol consumption. The disease is seldom encountered in women and none were seen in the unit during this period, although one, also an alcoholic, was admitted soon afterwards.

The patients underwent routine medical examination and radiographs were taken of the chest and feet. A full neurological examination was performed, while sural nerve and calf muscle biopsy specimens were taken and studied by electron microscopy. Diagnosis was established by the finding of typical structural changes and by exclusion of diseases such as diabetes, atherosclerosis and other neurological or vascular diseases. Transfemoral arteriography of the affected limb or limbs was then done, particular attention being paid to the digital vessels of the feet.

Clinical Features

All patients had the characteristic appearance of chronic alcoholism, with dark complexions due to excess iron intake from their home-brewed liquor. One or both feet were usually swollen and smelly. The affected limb was swollen distally, often to as high as mid-calf. The feet were warm, often shiny and in many cases hyperpigmented. Infected ulcers were present on the plantar surface of the toes or beneath metatarsophalangeal or interphalangeal joints. The digits were often deformed and clawed or were shortened and floppy, without normal joints, owing to phalangeal and digital resorption.

The pulses were often not easily palpable through the oedematous tissues, but Doppler studies showed the pulses to be present, and even digits distal to active ulcers had normal to excessive pulsation. Pad pulsation was also clearly audible if not excessive.

Bone Changes

All 15 patients had some degree of bone involvement in the feet. Phalangeal and metatarsal resorption with

Fig. 1. Forefoot, showing trifid third metatarsal.
shortening and tapering was present in 13 patients. Osteitis of the phalanges, metatarsals and tarsal bones was noted in 12. With healing, the ends of the bones became typically tapered and separated at the erstwhile joint space. On one occasion union occurred across destroyed joint areas, resulting in the appearance of a trifid bone (Fig. 1). Interphalangeal or metatarsophalangeal joint destruction may lead to subluxation of the involved joint. Eleven of the patients had a periosteal reaction of the tibia and fibula. One patient was noted to have a subluxation of the ankle joint.

**Arteriographic Features**

In all the patients, the arteriographic findings in the digital arteries were related to the severity of the trophic changes and infection. The feet all showed numerous beaded, tortuous digital vessels (Fig. 2). Thirteen patients demonstrated early venous filling due to arteriovenous communications (Fig. 3). Nine had unilateral foot involvement while 6 had bilateral disease. The proximal arteries were normal in 10 patients. In 4 patients, whose ages ranged from 36 to 75 years, the proximal limb vessels showed a mild degree of arteriosclerotic beading without occlusion, but no evidence of vascular insufficiency.

![Fig. 2. Arteriograms showing numerous tortuous digital vessels.](image)

![Fig. 3. Arteriogram showing arterial changes and venous filling.](image)

**DISCUSSION**

Idiopathic neurotrophic disease of the feet has been described as a triad consisting of a peripheral sensory neuropathy, trophic ulceration of the lower limbs and painless destruction of the bones and points of the feet. Anderson and Schorn used the term sporadic ulcerosteatolytic neuropathy in a report of 2 cases. Thornhill et al. in a study from Harlem, reported that 10 out of 194 alcoholic patients were diagnosed as having neuropathic arthropathy - 'Charcot's forefeet'. The bone changes in their patients were similar to those in the present series.

The bone changes appear to be secondary to trauma and infection, which occur easily when the patient cannot
perceive pain in the foot. These features are nonspecific and resemble the changes seen in diabetes mellitus, frostbite, syringomyelia, tabes dorsalis or even leprosy. In leprosy, typical bone changes occur in only 3-5% of cases, the majority of changes being nonspecific and similar to those described above. Leprosy may, however, involve the bones of both hands and feet, and other stigmata of the disease may be present.

The arteriographic findings in the distal vessels appear to rule out vascular insufficiency as a cause of this disease. The numerous abnormal vessels with the features of neovascularization may be related to the chronic infection or to the toxic effect of the alcohol. What part the sensory neuropathy plays in these changes is unknown. A peripheral neuropathy was present in all the patients.

Isaacson described the histopathology of the portions of feet excised from 6 of our patients and related the changes to the chronic alcoholism. The features were essentially those of a neuropathy, characterized by gross demyelination and axonal degeneration of the nerves. The distal digital vessels were increased in number and the smaller arteries and arterioles showed thickening of their walls, particularly the intima, with hyperplasia of the smooth muscles of the media and intima. In many instances, the lumina of the blood vessels were narrowed.

These changes were also found in sections relatively far away from the inflamed sites.

CONCLUSION
Alcoholic ulcero-osteolytic neuropathy occurs predominantly in men, all of whom are relatively heavy drinkers. All the patients in this series presented with trophic ulcers and infection of the forefoot, with varying degrees of digital resorption and clawing of the toes. Bone changes were secondary to infection. A peripheral neuropathy with typical changes in the distal vessels was found in all, and typical angiographic features were present in the distal vessels of the feet.

The aetiology of this disease is related to chronic alcoholism and the term 'alcoholic ulcero-osteolytic neuropathy' accurately describes the pathological findings in this condition.

REFERENCES

The Role of the Doctor in the Changing Health Service
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SUMMARY
During the last quarter of a century there has been a gradual change in the doctor's role from that of being the personal provider of medical care to that of the leader of a health care team which is placing increasing emphasis on promotive and preventive health.

For the doctor this has necessitated learning additional skills, particularly in the delegation of specific tasks to nurses and other paramedical personnel, the co-ordination of the activities of the health care team, and in teaching and management. The new Health Act of 1977 will enable doctors to develop along these new lines by making closer liaison between hospital and community-based services possible.

These new trends in medical care will in turn require urgent re-orientation in planning for new buildings and facilities in the health service; especially with a view to keeping expenditure within available resources so that health skills and knowledge can be made available to everyone.


CHANGES IN THE ROLE OF THE GENERAL PRACTITIONER AND SPECIALIST IN CURATIVE, PRIMARY AND PREVENTIVE MEDICINE

During the last quarter of a century there has been a subtle but profound change in the role of the medical practitioner. From being predominantly the personal and only provider of medical care, whether in private or full-