ON AINHUM

A DISEASE OF TROPICAL COUNTRIES.

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"ON AINHUM"

Ainhum was first described by Dr. da Silva Lima of Bahia, in 1867, in the "Gazeta Medica di Bahia", anni I, No.13, p.146, under the following title:-

"Estudis sobre o "Ainhum" molestia ainda não descripta peculiar à raça Ethiopica e affectando os dedos minimos dos pés."

Dr. Lima states in this article that affects "Ainhum" is a disease which, the fifth toes of black men, and as far as he knew, the disease was endemic in Brazil.

Dr. Seixas of Bahia, Pereira, Pirorano and other observers in Brazil are of the same opinion.

Since the appearance of Dr. Lima's article, various observers have recognised the disease in various parts of the globe. Most of them agree in limiting The Geographical Distribution of the disease to tropical countries and to the black races.

Cases are reported from Cairo by Dr. Milton, and from Suez by Dr. Creswell. According to Digby the disease prevails among the Krumen race of negroes,
and Messun states that it is common in the South African Republic and among the Kaffirs. It has also been seen in the Gold Coast by Eyles, and in Algiers and Madagascar. In India it is common among the natives. Crombie and Smyth report cases from Calcutta, it has also been found in Bombay and Southern India. So common, indeed, is the disease in India, that Crawford found 1 in 2,500 Surgical cases. In China, Ceylon, and the Pacific Islands it was observed by Guyot, vd. Progrès Medical of 1881.

In America cases have been reported from the Southern States, from Carolina, Florida and other states. Some cases seen in Philadelphia by Horwitz, and others seen in Canada were negroes from Carolina. The disease exists in Central and South America, and it is pretty common in the West Indies.

On an estate in Trinidad with about 600 East Indian labourers of less than four years residence in the Colony, I found the disease present in 36 cases.
Synonyms:

Ainhum is called "Ayun" by the Yorubas, a West African tribe.

In Brazil, it is known as "Ainham" or "Guigila".

In India, the common name is "Sukha Pokla" which means "dry suppuration".

"Ainhum", according to Power and Sedgwick's Lexicon, literally means "to saw".

Race and Sex.

The male sex is more liable to the disease. Of the 20 cases, reported by Von Winckler, which came under his observation, in British Guiana, all were males.

It appears that there is no case on record in which Ainhum has been seen in a white man.

Ainhum is believed to be a hereditary disease and Duhring in the Transactions of the American Dermatological Association of 1883 reports a case in which a father, mother and son suffered from the same disease.
4.

**Duration.**

Ainhum runs a chronic course, it is slow in its incipient stage, and occurs more frequently between thirty and thirty-five, although it may occur at any age. Its duration has been variously estimated. Some observers place it between two and four years, others between four and ten, but Dr. Evans reports one case of fifty years duration.

As the disease is insidious in the beginning and may exist for a long time without attracting attention, it is somewhat difficult to ascertain the date of its commencement.

**Etiology.**

Since the discovery of the disease, little advance has been made towards the discovery of its cause. By some it is believed to be **Mechanical**, by others **Hygienic**, whilst others consider it to be **Constitutional**.

Owing to the appearance of the disease among the slaves and labourers on plantations, it was at first believed to be the outcome of mechanical causes, either by the tying of a string around the toes or some other method of self-mutilation, but this theory, so far, has been quite abandoned.
It is quite probable, however, that the disease is due to constant irritation by particles of dirt getting into the digito-plantar fold of the feet of labourers.

The disease never seems to attack any but those who work in the fields with bare feet, and who are not over particular in the proper cleansing of the feet after the day's work.

Zambuco and Brun, in the Bulletin of the Academy of Medicine of Paris, 1896, suggest that "Ainhum" is not a morbid entity, but a modification of Leprosy.

Of 400 lepers in the Leper Asylum in Trinidad, I was unable to find a single case which had been preceded by Ainhum, or in which the two were co-existent. Doyle, in his case related in the British Medical Journal, Vol.I, 1889, makes special reference to the absence of a history of Leprosy and Syphilis. In Roy's cases also there is similar evidence as to the absence of a history of Leprosy.

Cases are on record in which several members of a family have suffered simultaneously, or at different times, from the disease, however it seems to be free from constitutional symptoms.
There are no constitutional disturbances, no tendency to the occurrence of similar changes in other parts, and no infiltration of other tissues.

The course of the disease is generally checked when the toe becomes separated. It may reappear in another toe, but never in the same.

When it appears in another toe it is due to fresh exposure to the cause, whatever that may be.

Part Affected.

In a large majority of cases the part affected is the fifth toe, of one or both feet, simultaneously or otherwise.

Dr. Seixas of Bahia, according to Fox and Farquhar's report, on the endemic diseases of India, asserts that Ainhum occurs always in the small toes of the feet, and does not extend to other parts.

This statement cannot be accepted as correct.

I have had under my own care, six cases, in which the fourth toes were also affected, and two in which the big toes suffered.

In the Army Medical Museum at Washington, there is a wax model by Baretta of Paris, in which
all the toes of the right foot have been amputated for Ainhum, and the disease is seen to have been in progress in the middle third of the leg.

Beranger-Ferraud reports a case in which all the toes were amputated as the result of Ainhum, and Eyles mentions an instance in which the second finger was the seat of the lesion. Potippidan, in the Lancet of 23rd October 1879, relates a case of Ainhum of the big toes. Suchard in the Progrès Médical, recites a case of the disease in the thumb. Guyot relates a case of Ainhum occurring in Utero, but this is probably fallacious.

There are authentic cases, however, of the disease in infants and in persons over seventy.

The seat of the disease is in the first inter-phalangeal joint, or across the first or second phalanx. The metatarso-phalangeal joint is seldom attacked, and the terminal phalanx invariably escapes.

Naked Eye.

The subject of Ainhum seldom comes under observation until the disease has existed for some time, on account of the little inconvenience caused by the condition, the absence of pain and other constitutional disturbance.
When first seen, as a rule, the toe is larger than normal, sometimes double the size, ovoid in shape, with a constricting band around the base, and attached to the foot by a small pedicle. The toe is more bent or flexed than normal. The skin is thickened, sometimes rough, sometimes smooth and glistening, particularly on the inner surface. As the constriction increases, the toe gets more flexed and everted.

The course of the disease is slow and progressive. It begins as a small furrow in the digito-plantar fold at the base of the fifth toe, on its inner and inferior surfaces. As the disease progresses the furrow increases in depth, and the constricting, almost linear, band spreads around the base of the toe, involving all the tissues, so that the toe becomes strangulated. Eventually the toe comes to be attached by a small pedicle and gangrene sets in, or the pedicle gets broken off by the slightest injury to the foot.

The progress of the disease is generally attended with pain, inflammation or ulceration in the furrow. Sometimes, however, ulceration is present, but this appears to be caused by injury to the pedicle, either by rough handling or a blow.
Hine says that the sensibility in the toe is diminished, but if the part be struck, the pain is intense. Some cases are reported in which there was acute pain in the back of the leg, which was relieved by amputation of the toe.

Dr. Roy, in the Medical Times and Gazette of 1880, relates a case in which a patient came to him suffering from Ainhum in one foot; this the patient attributed to an injury which he had received. On examination of the other foot, it was found that the disease was also present there. It had not been observed by the patient, and there was no cause to which it could be assigned.

Long before spontaneous amputation or gangrene occurs, owing to the inconvenience caused by a toe which seems always to be getting in the way and being knocked, a person suffering from Ainhum seeks surgical advice, and the offending member is amputated. The bone cuts easy and soft, like cartilage; there is a little capillary oozing from the bone, and the wound heals rapidly, without further trouble.
Histology.

The histology of the disease shows it to be a direct ingrowth of epithelium, with a corresponding depression of the surface, due to a rapid hyperplasia that pushes down and strangles the papillae, thus cutting off the blood supply from the epithelial cells, causing them to undergo a horny change.

On examining the toe after amputation, in the constricted area, there is a thinning of all the tissues, the papillae are atrophied, the glands are atrophied on the inner surface and elongated on the outer. The blood vessels are thinned out, the tendons fibrous and the bone in a fatty and fibrous condition, with an outer layer of cartilage.

On Microscopical Examination of a longitudinal section, the epidermis is found dipping into the sulcus, and adherent to the tendons, the mucous layer is thin, the papillae and blood vessels atrophied.

In the distal part the papillae are greatly hypertrophied, there is a considerable development of adipose tissue in which capillaries are present. The terminal phalanx is usually unaffected. In the first or middle phalanx, whichever is affected, there are large cavities in the spongy part of the bone, which are developed at the expense of the lamellae.
Duhring describes the appearances of an advanced case of Ainhum, and says that the epidermis is thickened, with enlargement and elongation of the papillae.

The blood vessels and circumvascular spaces are enlarged and filled with red and white cells. The meshes of the connective tissue of the corium contain large and small clusters of small round cells, for the most part surrounding blood vessels. Some of these have organised and formed connective tissue.

The lower layers of the corium are composed of loosely arranged bundles of connective tissue, and smooth muscular tissue, between bundles of which are variously sized spaces.

The arteries are dilated and filled with cells, and the veins are dilated and empty. There is a thickening of the walls of the vessels. The lymphatics are also dilated and empty. The sweat glands are atrophied. About the sweat glands are fat vesicles and round alveoli filled with lymphoid cells.

The tissue attached to the pedicle is composed of white fibrous and elastic tissue.
The toe looks as if in a condition of chronic inflammatory oedema.

The treatment may be summed up in one word "Amputation". Lateral longitudinal incisions have been suggested and done for relief, but the relief, if any, is temporary.

In four cases under my care I performed lateral incisions; two of the cases returned for amputation within six months, the other two I lost sight of. I have it on the authority of some of the oldest medical practitioners in Trinidad, that they have been similarly disappointed with the method of attempted relief by lateral incisions.

Believing that the disease was due to chronic irritation by particles of dirt getting into the digito-plantar fold, I have been in the habit of ordering patients suffering from Ainhum in the early stage, to wash and dry thoroughly the feet on their return from the fields, and then to rub into the folds at the roots of the toes carbolic oil 1 in 20. When the disease is not far advanced, but yet too advanced to allow the person to continue work without great danger of the disease continuing its course, I have ordered the patient to hospital, the feet to be cleansed and some mild astringent or antiseptic
ointment to be applied. By these methods I have treated about sixty cases of the disease in one year and eight months, whilst in charge of two estate hospitals. I have not a note of any one of these cases returning to hospital for treatment.

The disease occurs more frequently in the rainy season, particularly after a long drought, and when sudden heavy showers usher in the "wet season".

The people affected are those who work in the fields with their feet unprotected. They return home wearied after the day's toil is over, and are often too indolent and lazy to look after the proper cleanliness of their person. There are very few sanitary or hygienic appliances on the estate, and very little care is taken of the labourer. The result is that he retires to rest with muddy feet, this is repeated from day to day, until one fine day, probably on the Sunday, he takes a wash, but fails to dry himself properly, because the drying is done by the sun and not by the use of towels. The next day the process begins again and the feet get muddy, fresh irritation is again set up, and the condition of Ainhum is established.
Probably the folds of the toes become a fit nidus for the development of bacteria, but the existence of specific bacteria has not been proved. In the early stages of Ainhum, we often see Eczema and Chigoes associated with it.

Cases of Ainhum are very similar, and therefore I shall relate the history of three cases briefly.

Ragnath, aet 27, an East Indian labourer, two years resident on the Aranguez estate in Trinidad, admitted to hospital on the 25th April 1895, suffering from eczema of the legs. On examination of the toes he was found to be suffering from Ainhum as well, in a pretty well advanced condition. He remained in hospital for three weeks for the cure of his Eczema.

The toes were thoroughly cleansed and the 5th toe which was affected, was washed night and morning with warm carbolic lotion, after which boracic acid, 20 grains to the ounce of Benzoated lard and one drahm of Lanoline, was rubbed into the part.

The disease was apparently checked in a week's time; there was no further trouble and the patient never returned for treatment during the ten months following, during which time I continued in charge of the hospital.
When leaving the toe had not regained its normal size, but there had been no advance of the disease, the root of the toe was thinner than normal and apparently quite healthy.

Case 2.

Ragoonannan - also an East Indian labourer on the same estate, came to hospital on the 12th September 1895, suffering from Ainhum of the 5th toes of both feet.

There was considerable pain and tenderness in the right foot and ulceration at the base of the toe, owing to frequent injuries to the toe (as he said) The left foot was not painful, and was less advanced.

The toes were both amputated on the 14th September. The right 5th toe was merely cut across its base, but the left toe was disarticulated at the metatarso-phalangeal joint.

The patient left hospital a week later, quite well.

Case 3.

Francis Parker, aet 40, an African who came out to Trinidad in his childhood. He was a hard-working labourer who had earned a few acres of land which he cultivated in Cocoa.
His land was low-lying and in the rainy season became swampy.

He was a very intelligent man, and from the history he gave me, I gathered that for five years he had suffered from his feet. In the rainy season, after he had been out in the fields, his feet became uncomfortable. There was a good deal of itching and some tingling and burning sensation at the roots of the toes. The big toe, fourth and fifth of the right foot were affected - the fifth most. The big toe and fifth were affected in the left foot.

I amputated the two fifth toes and sent him home with instructions. He returned to me twice at intervals of a month each time and the condition of matters was very satisfactory.
The following is a list of works consulted:

Quain's Dictionary of Medicine.
Davidson's Tropical Diseases.
Lancet: I 1895-1879; II 1883-1886.
British Medical Journal: II 1880; I 1889.
Medical News, Philadelphia, 1895.
Transactions of the Medical Association of Missouri, Columbia. 1895.
Medicine, Detroit, 1895.
Sémaine Médicale, Paris 1894.
Medical Times and Gazette. II, 1880.
Transactions of Pathological Society, London, Vol. XVIII
British and Foreign Medico-Chirurgical Review, 1872.
Union Medical.
Le Progrès Médical, 1881.
Medical Record, 1882.
Transactions of the American Dermatological Association, 1883.