Puerperal Sepsis

Again and again during the last year I have been drumming into my students the advantages of the Hobbs' glycerine treatment, and have pointed out how this technique, not only lessens the grave risks of puerperal sepsis in the tropics, but diminishes the stay of patients in hospital by almost exactly half the number of days—a matter of great importance from an administrative point of view in these times of financial distress.

In order to convince you, my registrar has furnished me with the following data which speak for themselves.

In the five years, 1922–1926, before we adopted the Hobbs' treatment, there were 5,796 confinements. The incidence of puerperal sepsis per mille was 100.95 and there were 46 deaths, *i.e.*, 7.8 per mille.

From 1927 to 1931, when Hobbs' treatment was only occasionally employed, there were 7,061 confinements. The incidence of puerperal sepsis was 122.53 per mille and there were 45 deaths, *i.e.*, 6.5 per mille.

During the whole year of 1932 in which I have been using the glycerine treatment intensively, by this I mean *that on the first suspicion of sepsis a catheter is sutured into the uterus,* for the injection of glycerine three times a day; there have been 1,940 confinements. The incidence of puerperal sepsis was 109.28 per mille and there were 3 deaths, *i.e.*, 1.54 per mille only.

Moreover during the last 12 months I have entirely given up the use of antistreptococcal serum and substituted injections of Aolan, or skimmed milk. In addition no student, doctor or nurse was allowed to be in attendance on any labour case without a properly-adjusted mask over the nose and mouth. Brilliant green 1 in 100 was the only antiseptic used.

From a tropical point of view it may be that all these factors have combined to give us a record year as regards the paucity of deaths from puerperal sepsis, but my own impression is that the main credit is due to the keen work of my staff and the efficiency of the glycerine treatment, for all of you know the dreadful condition in which large numbers of our patients are brought into hospital after hours in labour and much mishandling.

The moral these statistics clearly demonstrate is one of enormous importance to every doctor and to every woman's hospital in the tropics—namely, that they have in the glycerine treatment and the injection of milk, together with the use of brilliant green and masks, a sure method of combating one of the greatest perils attaching to obstetrics.

My house staff will be very pleased to show any of you with what ease and simplicity a catheter can be inserted and sutured to the cervix of a puerperal patient without pain or fuss.

Most earnestly I beg you to accept the lesson of this method and these statistics.

YAWS IN THE NICOBAR ISLANDS*

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INCIDENCE of yaws in the Nicobar islands is not mentioned in standard books on tropical medicine. I have received reports from time to time, since my arrival in Port Blair, that syphilis is very prevalent in the Nicobars, causing severe disfiguration of the inhabitants and threatening the extinction of the race. Two typical cases of yaws in the secondary stage were noticed by me among Nicobarese, who were sent to Port Blair in 1930 for a trial for murder, these were cured with two injections of novarsenobillon (0.6 and 0.9 grammes). This led me to suspect that the cases reported to be suffering from syphilis in the Nicobars might be cases of yaws. I understand that Lieut.-Col. Barker, I.M.S. (1925) reported a case of yaws from the Nicobars, but I fail to find any other record of the prevalence of this disease in the Nicobars. An opportunity occurred for investigation when the census superintendent for the Andaman and Nicobar islands required the services of a sub-assistant surgeon to record anthropological measurements of the Andamanese and Nicobarese in connection with the census report for these islands. Dr. Naidu was deputed for this work and I sent him well equipped with, I considered, an adequate supply of novarsenobillon in the hope of temporarily ameliorating the condition of the people, and awaited a report from him as to any further steps to be taken to combat the disease. I may mention that the Andaman islands are free from yaws, while syphilis and gonorrhœa are common and are principally responsible for undermining the fertility of the aborigines. Dr. Naidu worked under difficult conditions with regard to language, the time limit, and discomfort of a camp life, from 7th February, 1931, to 18th March, 1931. From his report, it would appear that an interesting study of tropical diseases could be made in these islands. The principal diseases prevalent in both the great and little Nicobars are yaws and elephantiasis. Altogether he treated 60 cases of yaws.

He also noticed that at Chowra, out of a total population of about 600, 35 were showing visible signs of elephantiasis. During the course of his whole journey he came across only two cases of syphilis—one contracted at Nancowry and the other at Car Nicobar—both trading centres for the outside world with a floating population of eastern nationals. He had a large out-patients' attendance wherever he camped.

*A résumé of a lecture delivered at the Clinical Society of Port Blair on 13th February, 1932.

The people from different islands appreciated the treatment given and expressed a desire to Mr. Bonington, census superintendent, and to Dr. Naidu that they wanted the whole-time services of a doctor for the island. If a doctor would be appointed for them, Teressa or Comorta would be a suitable central place for a hospital or dispensary. As regards medical facilities for the Nicobars, a doctor, appointed by the Car Nicobar Mission (subsidised by local Government), is stationed at Car Nicobar in charge of a hospital, and a small dispensary in charge of a compounder is established at Nancowry, but there are no amenities for treatment at any of the other islands, and only in fine weather can the inhabitants go to these two centres. Dr. Naidu exhausted his stock of novarsenobillon in treating cases of yaws before he returned. On receiving his report I proceeded to the Nicobars with Dr. Naidu, in April 1931, with a plentiful supply of novarsenobillon. We took the opportunity of examining some of the cases that had received an injection two months previously. The inhabitants were so impressed with the efficacy of the treatment that more cases eagerly sought treatment and another 47 cases were treated.

This number would have been considerably bigger if it had been possible to send information of our impending visit to the various villages. The cases that had received an injection in February or March had all healed up with the exception of two who still manifested latent infection and indolent sores. These were given a second injection.

Yaws (Frambœsia)

Local synonyms for yaws, 'Aiyoke' (Teressa) and 'Aiyak' (Chowra), and for syphilis 'Thannoi' and 'Sakayace'. Although they do not bear any relation to the native names mentioned by Manson or Castellani, there is a resemblance in phonation in the local synonyms in the two islands, while it is noteworthy that the names for syphilis are distinct and definite without any such similarity.

Geographical distribution

The Nicobar islands may be regarded as a continuation of the chains of islands of the Malay archipelago and are adjacent to other endemic area of yaws; *viz*, Upper Burma, Assam, Siam, Ceylon, Java, and Sumatra.

While it has been observed by authorities on yaws that the disease has a predilection for certain native races, particularly of the negro or negrito stock, it is not known among the Andamanese who belong to the negrito stock, although syphilis is very common among them, and yaws exists endemically within 150 miles of these islands.

Epidemiology

The sanitation is primitive and conditions are ideal for the maintenance of infection. The people live in primitive huts whose floors and walls may be impregnated with infection. Where human beings, dogs and pigs live huddled together, it is easy to understand how this disease spreads rapidly.

It is quite possible that house infection is important, judging by the habits of the people, but from the innumerable flies we saw settling on yaws sores it is easily conceivable how these convey the spirochætes to pre-existing breaches of skin of the inhabitants.

The principal occupations of the people are cultivation of cocoanut and tobacco, pig herding, and fishing.

Ætiology

In our series adults were most commonly affected. We could not get information regarding their age, but, guessing from their appearance, it is most common amongst men between 20 and 30 years and amongst women about 25. The youngest patient was 3 years old, and the oldest 45. In our series there were 26 men, 8 women and 4 boys.

As regards the local theory of the causation of the disease, people of Chowra were not able to offer any suggestion, while in Teressa they attributed it to eating papaya fruit; they believe that this is heating to the body, and that the rash thus brought out is aggravated by the itching produced by the bites of mosquitoes and flies.

Causative organisms.—Conditions did not favour extensive laboratory examinations, but we were unable to demonstrate the spirochæte in scrapings from the sores. Wassermann reactions were not done and the diagnosis of cases is entirely based on clinical and therapeutical evidence. We did not come across any case where yaws and syphilis coexisted. Only two cases of secondary syphilis with typical eruptions were seen by us and the eruptions were so distinct from those of secondary yaws that one could not mistake them clinically. As the disease was seen mostly in young adults, no case of endarteritis or arterio-sclerosis was noticed; this however is very rare in yaws, although common in syphilis, and is useful in the differential diagnosis of the two diseases.

Incubation period

No definite information could be obtained from the people at Teressa or Chowra regarding the incubation period. Some of the Chowra people thought that it might be one month. The period is probably a longer one. The source of infection in one patient was traced more or less definitely. A case of yaws from Chowra went to stay with her friends at Nancowry and a woman in whose house she was staying developed yaws three months after the former had left her house and returned to Chowra. No other history of exposure to infection could be traced, so that a period of 92 days given as the maximum in some of the

books appears to correspond in this case. We have of course to take into consideration that their idea of dates is somewhat different from ours.

Primary stage

'Madre Buba or Mother Yaws'. An infiltrated papule develops at the site of inoculation or a granuloma in an old skin lesion, such as an ulcer, an itch pustule, an insect bite, or any abrasion or scratch incidental to a jungle life. In the initial stage, they complained of intense itching, lasting for about a week. It is interesting to compare this with the chronic infective granulomatous condition common on the neck and hump in cattle in Port Blair. In our series, the lower part of the leg was the site of predilection, other common sites being the thighs, arms, buttocks, and groins—all extragenital. No case was seen of primary lesion on the breasts of nursing mothers or mouths of suckling babies, nor in women at the bend of the elbow nor on the hip. The lesion is remarkably persistent lasting even up to a year, or it may heal up in about a week to 2 months time, leaving a white scar (no pigment). If the sore does not heal, it begins to enlarge and in about a week's time from its appearance it begins to ooze a yellowish secretion, with the itching consequent to intense local irritation, or it becomes covered with a thick crust or scab, due to inspissation of the secretion. Constitutional symptoms were negligible in the patients examined and interrogated by us, and the lesions did not incapacitate them from work for any appreciable period. Pain was complained of by patients both at Chowra and Teressa particularly in the early stages, but it disappeared when the yaws was fully matured. Although induration is said not to be the rule, this was noticed in half the cases. Enlargement of the lymphatic glands was not conspicuous and there was not a single case of suppuration of glands in any of the three stages.

This stage lasts from few weeks to several months, in our series the average duration was 3 months and the primary lesion was present in most cases with secondary eruptions.

No treatment was adopted by them in the early stage and it was not until the yaws became a large granulating ulcer that treatment by application of leaves was resorted to.

Secondary stage, or stage of generalised eruptions

The onset of this stage corresponds with the decline of constitutional symptoms and most of our cases treated were well advanced in the secondary stage. Generalised eruption is ushered in as follows :—Minute roundish papules of the size of a pin-head are seen, with a yellow crust at the apex, usually three months after the primary lesion, lasting a few weeks and leaving, when they disappear, furfuraceous patches; these patches are circular and show a fine sand-coloured desquamation as if the skin has been dusted over with flour or ***atta.*** This condition was only noticed in one of our cases. Some papules coalesce, enlarge, and the skin gets proliferated or hyperkeratoid.

'Keratoid exanthem' of Scobe and Sellard, which is common on the face and limbs persisting throughout the attack of yaws, was not seen in our cases, nor was pigmentation present in any of them. The eruption is very characteristic; from its appearance resembling a raspberry it is called 'frambœsia'. Papules appear around the primary sore. The itching produced by these is intense. Like syphilis, the eruption is pleomorphic, scaly, papular, roseolar or ulcerative, and appears on exposed situations and on the anterior surfaces. The common sites are the legs, forearms, arms, thighs, groins, trunk and face; only one case of scrotal infection was seen. There is no pain and the peculiar offensive sour or musty odour, due to infection with Vincent's bacilli, was absent in our series. Papules appear in regular constellations, large ones being surrounded by satellites. Autoinoculation is probably responsible for their symmetrical appearance on contiguous areas of skin or mucous membranes, such as the anus, groin, angles of mouth, and vulva. Other characteristics in our series which correspond with the general description in books are that the eruption is painless, mucous membranes and bones are unaffected, there were no eye symptoms, and the patient was able to attend to his work throughout this stage.

No case of 'ringworm' yaws was seen. Not a single case of hyperpigmentation was noticed by us. Only one case of arthritis of the knee was seen, although arthritis of both large and small joints is said to be common.

Periostitis was common, particularly in the digital phalanges. There were no nervous symptoms; hyperhidrosis, a sign confined to hand and soles particularly in children, was not seen.

Tertiary stage

This is a stage of gummatous nodules and deep ulcerative processes. The transition period between secondary and tertiary stages differs widely from that of syphilis. Instead of getting absorbed and healing, yaws may spread marginally, as well as deeply, and lead to extensive ulcers which may last for years. Such ulcers may involve deep structures, producing necrosis of bone or cartilage, or give rise to cicatricial contractures.

Onychia, paronychia, atrophy, and shading of nails were present in a few cases. Multiple dactylitis with uniform swelling of the phalanges was noticed in the case where the tibia, forearm and clavicle were also affected by periostitis.

Yaws on the soles of feet is limited by thick skin. Like an abscess in this region, it is

under high tension. It attains a large size before it bursts and is therefore very painful. When the thick epidermis gives way, this is converted into a fungating ulcer and, although painful to the touch, is not painful to the same degree as it was before it burst through the skin. This ulcer, after the pent-up secretion oozes out, appears like the section of a pomegranate cut through with a knife. In one of our cases this condition had lasted over two years and showed no signs of healing even along the margins, which were thick and indurated. Perhaps want of dressing, and constant irritation from dirt are responsible for the prolonged duration in this case. The lesions were unilateral.

One case of 'clavus' was also seen.

'Gangosa'

This is a destructive, disfiguring process with deep ulceration of the nose and pharynx, and is said to commence as an ulcer of the soft palate. It spreads slowly and leads to complete destruction of the hard palate, the soft parts, cartilage and bones of the nose, in some cases sparing the upper lip which forms a bridge, in other cases leading to its partial destruction. A great cavity is left with the tongue, which remains unaffected, as the floor. Two typical cases of this condition were seen. A third case showed spontaneous arrest—duration about six years. The larynx was unaffected, articulation was seriously impaired, but phonation was retained. There were no other bone lesions in these cases. The age of the three patients was between 35 and 45.

Bone lesions

These are common in the tertiary stage. As in syphilis there are painful nodes on the anterior surfaces of long bones, such as the tibia, radius, ulna and clavicle, which are hard, tender, and painful in the beginning, and remain as thickenings when the acuteness subsides.

The characteristic sabre-shaped deformity of the long bones affecting the tibia, forearms, arms, and clavicle was noticed in one case.

Fibrotic tumours, called juxta-articular nodules, over the olecranon and lower end of the femur, which are painless and multiple were seen only in one case.

Skin lesions

Healing of subcutaneous gummata with loss of pigmentation of skin resulting in leucodermic patches is common and unlike syphilis it is not confined to the hands, ankles, wrists, feet and palms.

General health

In spite of the animistic ideas of the inhabitants, they appear to be grateful for western methods of treatment and they need no persuasion to be injected, as after the first course of injections given they gain faith as to the efficiency of our method of curing the disease.

They believe that it is a chronic disease, but not a fatal disease. Although at Teressa, many adults are reported to have died of the disease, at Chowra only 3 children under 10 have died from yaws within the last 3 years. We have to take into consideration an outbreak of small-pox which may have been responsible for the large number of deaths reported at Teressa.

Relapses are not common and one attack confers immunity. It has been observed by investigators that 'apparently saturation of a community with yaws virus produces a relative immunity to syphilis' and this may account for the few cases of syphilis seen on these islands.

Treatment

With the limited time at our disposal the only treatment tried was injections of novarsenobillon,

0.9 gramme for adults,
0.6 gramme for young adults,
0.3 gramme for children up to 10 years of age.

One injection appears to have cured most of the cases, although this needs confirmation by a second visit to the islands to examine the cases that have been injected.

Treatment adopted by the Nicobarese

At Chowra, application of certain leaves, *Rafab*, according to them appear to check the disease. At Teressa, the ulcers are rubbed with sand and then washed in sea water; this is supposed to irritate the ulcers and assist cleaning; a paste of leaves (Ramintho), made by boiling and grinding, is then applied. Ulcers are said to disappear in a few cases after a series of applications. The inhabitants appear healthy and well nourished, and yaws did not affect their general health, so that the prescription of tonics and good food as general treatment was not necessary in them.

Prophylaxis

It is evident that direct contact is the usual method of transmission of the disease from person to person. According to Manson-Bahr, blood-sucking insects may be responsible, but, in the Nicobars, flies appear to us to be the more likely agents. The local theory of communicability in certain islands is that partaking of contaminated food produces yaws. In my opinion the only way of adopting prophylactic measures for the eradication of the disease is to appoint a medical officer with a steam launch at his disposal for one year, so that he can visit all the islands in turn periodically and give

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THE RÔLE OF CHÆTOPODS (SEGMENTED WORMS) IN THEIR RELATION TO MAN

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and
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(Read before the Indian Science Congress, 1933)

THE Annelid worms comprised within the orders of the Oligochætes (earth-worms) and Polychætes (sea-worms) do not often come within the purview of the medical man or pathologist, although the occasions on which they do so are interesting and sometimes important. It is from the economic point of view that they must be assessed to be of much greater interest to man.

Their economic importance was pointed out of course by Charles Darwin who realised what a vast influence the earth-worms have in the cosmogony of Nature by their uplifting of the soil and amplifying the bounties of plant life to man. Then the aquatic species provide fish with much of their food, for example the Oligochæte Tubifex, which burrows in the soft mud of shallow collections of water, is preyed upon by fish just as are the earth-worms on land by birds, and likewise the Polychætes, or bristle-worms, which live in the sand or slime on the bed of the sea or tidal rivers, provide food for vast numbers of fish, these worms indeed being sometimes used as baits by fishermen. And more directly than this, man sometimes uses these creatures for food; Professor Percy Moore of Pennsylvania University has informed us that he has seen Italians engaged on rail-construction in the United States using earth-worms for making soup, the worms being boiled and the solids then strained off and discarded. They cannot however be considered to have much direct food value to man, otherwise they would not exist in such numbers as they do while poor beggars are rummaging in dustbins for scraps of food. At any rate we are told by Dr. Hutton on the authority of a friend of his who made a 'practice of experimenting on every sort of animal and insect food' that they are 'uninteresting' to the palate.

While the Chætopods have not yet made their appearance in the pharmacopœias of any 'western system' of medicine one may note that they are made use of in certain other 'systems', and in this connection we cite Gate (1925) :—

'Worms are used in various preparations by the native doctors both in Burma and India. In Burma the most important use is in treatment of a disease called "Ye se kun byo", the symptoms of which as described by Burmans greatly suggest pyorrhœa. The worms are prepared by heating in a closed pot until reduced to ashes. The ashes are either used alone as a tooth-powder, or to the ashes are added roasted and pounded tamarind seeds, and unseasoned betel-nuts to make up the powder. This is supposed to be a sure cure for the disease. When attempts have been made to learn which species of worms are used for this medicine, the answer is invariably, "Oh, just the common one found crawling around during the rain".

In a disease called "Me kha yu" the symptoms of which are white-spots on the tongue and membrane of the mouth, slight fever, laxity of the bowel, and, in very small children, inability to suckle, the remedy is worm-ash applied to the spots in the mouth. It is also used similarly for canker.

A disease called "Kalay yawga", the symptoms of which are vomiting, laxness of bowels, and excessive thirst. For this earth-worm castings are roasted, shaken thoroughly in water, and the clear fluid decanted. Dose—a cupful to be drunk once a day. This is said to be "very cool medicine for hot stomach".

A disease called "Mainma mecphwa noyeekhun thwaykhan". Symptoms are general weakness after pregnancy and inability to nurse the child. The common worms are boiled in water with salt and onions. The clear fluid is decanted and mixed with curry or other food.

A disease called "Panthay ana", the symptoms suggesting impotency. The oil from the bodies of three tocklus is mixed with five ticals weight of sesamum oil. In the mixture three large worms are boiled. The oil is decanted and used to massage the penis. This is said to be "exceedingly powerful medicine".

The earthworm Lumbricus is used by quacks in India and in some cases by the Kavirajes as a medicine. It is boiled in pure mustard oil and the preparation applied as an antiseptic to ulcers and sinuses.

The body-juice of fresh Lumbricus mixed with fresh raw milk or butter is often widely used for apthous and ulcerative stomatitis not yielding to other medicines'.

Such are the examples of Chætopods in their rôle of utility to man. From the medical standpoint we have a few but interesting records.

From the public health side we have found earth-worms in their early stages appearing in the water-supply of large cities. In one case that came to our notice it was thought that the young worms had migrated through the soil down to the mains and been sucked in to the pipes through a gap in the joints.

On the other hand we have a few reports of Oligochætes 'parasitising' man.

Curling (1839), cited by Blanchard (Blanchard and Savignac, 1910) reported 'worms'

(*Continued from previous page*)

appropriate treatment where necessary. Each endemic area needs to be visited at least once in three months.

In conclusion, I wish to express my thanks to Dr. D. Naidu for his loyal co-operation and help in collecting statistics and local information, and in treating cases under adverse conditions.

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