

EPIDEMIOLOGICAL NOTES DURING THE AUTUMN  
OF 1883 IN BEYROUT, SYRIA.

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IN August 1883, it was reported from Latakia, a town on the northern coast of Syria, that they had an epidemic of dengue fever, which soon became so universal that very few escaped it. How it came there, or whether it originated on the spot from some local causes, seems to be unknown. From the fact that it was not heard of before in any other place which would account for its importation, it seems that we must take the latter view, and believe that it arose there *ab novo* from some "climatic state" or "atmospheric change", which the ancient physicians attributed either to telluric exhalations, or to some intrinsic change in the water held by the atmosphere itself, which is caused by some unnatural condition of the season, and which they called by the general name of "the constitution of the seasons". Having once originated, it seemed to spread to neighbouring places by importation, as the sequel will show.

It appeared in Beyrout about the beginning of September, and in two or three weeks spread through the whole town. In October it had become so universal that very few escaped it. During the summer, many—probably not less than one-third—of the inhabitants of Beyrout had gone up to the villages of the Lebanon, either for change of air, the cooler atmosphere, or fear of an outbreak of cholera in the plains. As they returned in October most of them took it. In the beginning of November we had a heavy storm of rain, with much lightning and thunder, which continued two days, and which did not appear to have any sensible effect on the epidemic, the disease still picking up persons who had previously escaped. On the 20th of the same month there was another heavy fall of rain, which lasted some days; but there were fresh occurrences of the fever lingering through the whole month of December.

From Beyrout the epidemic was propagated to all the neighbouring villages at the base of the Lebanon, where it spread very much among the inhabitants; but it did not go up to any place higher than 2,000 feet above the level of the sea, except in the case of persons who took it with them, and from whom it was not generally communicated to others. Like cholera, it seems to find no favourable soil for its extension in the high and dry air of the mountains. It spread also northward as far as Batrum (the ancient Botrys, a small town on the coast between Beyrout and Tripoli), and southward to Sidon, from which place it spread also to the low villages on the adjacent hills. In Sidon the disease was so widely diffused at one time, that, when a death occurred in the town, the burial could be attended to only with much difficulty. I have no certain information as to how far south the epidemic went, but I believe it reached Tyre and Acre.

The former visitations of dengue, as far as they have been noticed in Syria and neighbouring parts of the East, and as far as I have been able to find out, are as follows:—It appeared in Syria for the first time in 1861, when it seems to have been as universal in Beyrout as it was this year; and again in 1865, 1867, and now in 1883. It is said to have visited Cairo in 1845, Port Said in September and October 1871, Ismailieh, November 1877, Cairo and other parts of the Delta in September, and increasing in intensity about the beginning of October, when humidity is at its height in Lower Egypt. I am not aware that it has ever appeared in the highly dry atmosphere of Upper Egypt, a fact which, taken with others, would confirm the view that moisture in the air is a favourable, if not an essential, condition for the propagation of dengue fever.

An epidemic of what now appears to have been evidently dengue fever, prevailed over all Malta and Gozo in the autumn of 1878. The mode of invasion, the symptoms of the disease, its short duration, the eruption, and the subsequent debility, mentioned in the printed report of a Commission of medical men to the Government, leave hardly any doubt as to the nature of the epidemic. By a strange oversight, it was not then recognised. It was probably brought from India with some ship, though the Medical Commission did not believe that it was contagious, and supposed that it owed its origin "to local conditions or to a pandemic wave". A heavy fall of rain in the first part of September, followed by a protracted and excessive heat and *moisture*, and the prevalence of scirocco, they thought, materially contributed to the diffusion of the disease.

The epidemic in Beyrout was almost absolutely universal. All the physicians of the town, with a single exception, had it, myself sharing the general fate. The premonitory symptoms, when the disease was not ushered in suddenly, were general lassitude and a falling off of the appetite for two or three days. The actual invasion usually began with a chill and fever, severe pains in the limbs, chiefly in the back and knees, frequent and full pulse, sleeplessness, and a coated tongue, with a very bad taste in the mouth. This continued generally from three to four days, when a red eruption appeared on the whole body, sometimes involving the face. On the appearance of the eruption the fever generally subsided, and the patient was considered convalescent, though there was sometimes a slight rise of the temperature about the sixth day which was generally unnoticed. The convalescence was usually accompanied by much weakness, and this was protracted for some weeks in elderly or debilitated subjects. In a few instances there was a real relapse of most of the symptoms of the first invasion, though in a milder degree, and probably without the eruption.

In looking a little more closely to the main symptoms of the disease, we have the following observations to make.

1. The articular *pain* which has given this fever its special name, *Dengue*, a Spanish translation of the word *dandy*, by which it was called among the negroes of the West Indies, both words signifying a stiff gait in walking; in Syria it early received the name of "knee-fever"; and in America it was called "breakbone fever". All these names point to the pain, which affects chiefly the knees and lumbar portion of the spinal column, and which is quite characteristic of this disease. I have never seen any swelling of the joints, though they are said to be sometimes swollen and hot. Pain in the head was very frequent, specially during the first day of the fever, and often accompanied by severe pain in rolling the eyeballs upwards or pressing them with the finger.

2. The *fever* generally continued from three to five days. Sometimes it and the other symptoms were so mild that the patient did not keep his bed, and occasionally it exceeded the fifth day, and the case was severer than usual. I had the temperature taken carefully in six cases in the hospital, morning and night, and it varied between 37.5 C. and 40.2 C., most generally a little higher in the forenoon than in the afternoon. It is said that in the dengue fever of India, after the subsidence of the fever about the third or fourth day, there is generally another rise of the temperature about the

sixth day; but this appears to have been rarely so in the Syrian epidemic. In only one of the hospital cases did I observe this rise. Private patients could not be watched so easily, as they left their beds or houses as soon as they got better, and considered the ailment as too trivial and short to need much attention.

3. The *eruption* came out over the whole body generally about the third or fourth day. In some cases it did not appear at all; in others it was the chief symptom in recognising the disease. When it came out well it was generally supposed to indicate the complete subsidence of the disease, and the same critical relation of the eruption to the fever has been always held by the common people as true in the other exanthemata; but while this seems to be true in most cases, it is not so in every instance. The eruption was not of one kind, it was generally papillary, like that of measles, slightly raised above the skin; sometimes it had a mottled appearance without any elevation, and occasionally there was an erythematous blush like that of scarlatina. In every case the colour was more or less red. It was often attended by a pricking sensation, and ended by desquamation. The general constancy of the eruption and its appearance at a certain stage of the fever, followed by a decline of the symptoms, clearly point to the classification of dengue among the exanthematous fevers.

4. The *digestive functions* were almost invariably impaired to a very unusual degree. The appetite was completely lost, an extremely bad taste was felt in the mouth, and the bowels were always constipated. In a few cases there was much irritability of the alimentary canal, with some vomiting and diarrhoea, which has led a few medical men to suppose that there are two varieties of dengue, called by them the rheumatic and gastric; but this is evidently a mistake, for the gastro-intestinal symptoms were accidental, and were probably owing to a previous bilious state of the system. The same thing may be said of occasional pain in the throat arising from a congested state of its mucous membrane.

5. The epidemic was almost *universal*, sparing no age, from the infant at the breast to men in advanced life; and the same account is given from the other places in Syria which it has visited. But in no case could death be directly traced to it, though in some instances it seems to have stirred up to a fatal result some old or latent disease, or it may have prepared the person for a subsequent and serious illness ending in death. The severest case I saw was accompanied by some delirium and a considerable amount of inflammation of the testicles,

which had to be leeches. In some instances it was attended with sore throat and enlargement of the lymphatic glands of the neck. In one young woman it seems to have produced temporary insanity for a few days. As a general rule, the patient was confined to his bed only two or three days, rallied by his friends for being the victim of knee-fever. Perspiration was always useful in mitigating the febrile symptoms and the attendant pains, but it was never so critical as in intermittent fever.

6. One more point remains to be noticed, and that is the question of the *infectiousness* of dengue. The fact that it spread from an infected centre to the neighbouring towns and villages, as we have shown in the early part of this paper, and that when it came into a family it attacked all its members, with hardly an exception, one after the other in the course of a few days, points very strongly to the belief that dengue fever is the most infectious of all diseases. I know hardly any instance in which there was exposure to it during its height of prevalence without the person succumbing to its influence of communicability. Mothers and nurses gave it to the youngest infants, who, with fever, had the characteristic eruption. Sir W. R. E. Smart, who has extensively studied a number of its visitations, and given a detailed account of them, says: "In the whole of this wide dissemination there was sufficient evidence of its infectious, if not of its contagious properties." (*Trans. of the Epidemiological Society of London*, Vol. IV, Part I.) The medium of infection seems to be more the air than contaminated water, but what this "contagium vivum" is, I could not discover. The examination of the blood by the microscope during the fever revealed no disease-germs, though there was an alteration in the form of the corpuscles. The exposure of every one was so great and so constant that it is difficult to say what the period of *incubation* was. A few cases, who took the infection with them to the mountain villages, which were free from the disease, and did not fall ill before the tenth day after their arrival, would show that this was the utmost limit, though the usual time was probably not much more than two or three days.

I have already stated that the epidemic in Beyrout began in September and ended in December, its height being in October, and from the history of former visitations, and the fact that it has been hitherto limited to tropical and southern latitudes, viz., India, the West Indies, Brazil, the southern United States, Egypt and Syria, Zanzibar, and once Malta, and that at no time did it spread in villages of the Lebanon higher than 2,000 feet, where the air is cool and dry, it would

appear that the most favourable, if not essential, condition for its importation and extension is a warm and moist climate. This will probably explain why Europe, with the exception of Spain, has been spared a visitation from the eruptive fever.