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Infection. ✓

CLINICAL LECTURE DELIVERED AT THE PENNSYLVANIA HOSPITAL.

By J. M. DA COSTA, M.D., LL.D.

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[REPRINTED FROM INTERNATIONAL CLINICS, VOL. II., SEVENTH SERIES.]

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presented by the author



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# Medicine.

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## THE COEXISTENCE OF TYPHOID AND MALARIAL INFECTION.

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GENTLEMEN,—The case now before you is one of great clinical interest, for I think that it will help to settle definitely a much-disputed point in pathology. I will read you first the history and the clinical record of the patient, will examine with you his present condition, and then make some remarks about special points in the case.

This man came into the hospital on the 9th of November with the following history: His family record is good; there is no hereditary disease so far as we can find out. He is twenty-five years of age, and stated that he had never been ill previous to the attack from which he was suffering when he applied for admission. He is a man of good habits. A little more than three weeks ago he began to have headache and chills recurring regularly every second day. He had also backache; he did not have bleeding from the nose. The rigors were followed by high fever and by sweating. The patient was not sure whether the chills came on always at the same hour,—he did not observe this with any accuracy; but is certain that he had chills in the afternoon, about the same time every second day. The form of chills was therefore most likely tertian. It further appears from the notes that last week—after having had the chills for about two weeks—he began to have diarrhoea, but did not keep his bed. He also had a slight cough, with persistent fever, was losing flesh and was very weak. He has had no chill since his admission; but we found that he presented a continued fever, which exhibited the features of typhoid. As you will observe by this chart, the temperature was only 97° F. when he was admitted on the 9th, but it rose to 102.4° during the day, declined to 100° by the next morning, rose by evening to 103.8°, declined the morning of the 11th to 100.6°, returned to 103.2° in the evening,



been throughout ranging about 110, just before his baths. He has a slight cough, but no marked congestion of the lungs. Some harshness of the respiratory murmur at the lower part of the right lung posteriorly is all that I can find upon physical examination of the chest.

Now, that he has typhoid fever there can be no doubt. The continued fever, the appearance of the tongue, the swelling of the spleen, the diarrhœa, and the eruption are all thoroughly characteristic. Of course, if we wanted to make the diagnosis absolutely positive, we might have the stools examined for typhoid bacilli and the blood tested by the serum test. The history of the case suggested a microscopical investigation of the blood as likely to be of great value. I have had the blood examined; it showed marked brown pigmentation, and with these masses there were various forms of malarial organisms, though not the crescentic forms. The white corpuscles contained a great deal of pigment, irregular in shape; there was none in the red cells. On the whole, the evidence of malaria in the blood is striking and unquestioned.

We have here, indeed, a case which proves the coexistence of malarial fever with typhoid fever. But, before discussing this point, I will speak to you of the treatment. I have just said that the case was undoubtedly one of typhoid fever with malaria. The treatment therefore was modified and adapted to the malarial infection. For the first few days he took ten grains of quinine sulphate twice daily, subsequently reduced to five grains twice a day. This he is still using; and, indeed, it represents all his internal treatment, except that he has half an ounce of whiskey every four hours, and the strictly regulated liquid diet of typhoid fever, consisting largely of milk. He is also taking cold baths, and bears them well. As he spoke of being chilly after the baths, a little stimulant while in the bath was given. The treatment is being carried on with good results. Indeed, you can see, from the man's appearance and the clearness of his mind, that the disease is pursuing a favorable course. There are no nervous phenomena whatever, and he sleeps well at night.

I have told you that this is a case of mixed typhoid and malarial infections. The whole question of the coexistence, combination, modification—call it what you choose—of typhoid fever with or by malaria is one of the most interesting questions in clinical medicine. There was at one time a belief that many cases of typhoid fever begin in malaria, commencing as an intermittent or remittent, and end as typhoid fever. This belief has been especially held in malarial localities. Then there has been the view that there is no coexistence of the

two poisons, but that they develop a third disease, which has been called typho-malarial fever, and which is not typhoid fever nor malarial fever, but a distinct affection. Another view is that neither coexistence nor blending of the two poisons happens; that the whole supposition is based on an error of observation. Let me say that this opinion has been very largely held where malaria does not prevail. Availing ourselves in the case before us of the modern means of research and the tested methods of microscopical investigation, we have the most positive proof of the concurrence of the two poisons. The first view is here shown to be correct, that the two poisons can coexist in the human system. But there is no evidence that the typhoid fever develops out of the malarial germs, or that typhoid fever grows out of malaria. Their concurrence only is undoubted.

The case that I have just detailed to you is valuable on account of the easy and striking proof afforded by the blood examination, and because it is one of a limited number in which the malarial organisms have been found in the blood of a typhoid fever patient, presenting at the same time a clear and significant clinical history. There are, in truth, but very few well substantiated instances on record which actually demonstrate that the characteristic micro-organisms of malaria may exist concurrently with typhoid fever. One of the clearest and best of these is reported in a paper presented by Dr. W. Gilman Thompson to the Association of American Physicians, and published in its volume for 1894. It is Case I. of the series, and shows that in a man who had, unmistakably, typhoid fever a chill happened on the thirteenth day of the illness, subsequent to which, when the blood was examined, the malarial plasmodium was detected in large numbers. During the third week two other chills occurred; the patient recovered under the free use of quinine. In Case II. the chill did not take place until the thirty-seventh day, some days after the temperature was normal, and malarial organisms were found in abundance in the blood. Here the malarial manifestations did not come on until just after convalescence. In Case III. they did not appear until the forty-first day, and it must be an open question whether the patient may not have contracted malaria after the typhoid fever process was over. In the first two cases there can be no doubt of the concurrence. In the discussion that followed this paper Dr. Osler cited a case in which, with the symptoms of a tertian intermittent, the malarial parasite was found just before the beginning of a severe typhoid fever, and stated that it was the only instance in three hundred and nine cases of typhoid fever, with blood examinations in all, in which malaria had been met with.

The very interesting case described in the Johns Hopkins Hospital Reports, vol. v., 1895, of a woman who had a severe typhoid fever following an obstinate continuous malarial fever, in which the organisms of an irregular autumnal malaria were detected, cannot be, I think, classed with certainty with those under discussion, since there was an interval of at least three weeks between the cessation of the malarial fever and the development of the typhoid fever; during the course of this, too, no organisms were found in the blood, though on one occasion a chill happened. Excluding this very doubtful case, which is rather one of infection of typhoid immediately following malarial fever than the concurrence of both, we are reduced to three, and, with the case I am showing you, to four undoubted instances in which the coexistence of the two diseases has been actually proved by microscopical blood examinations. These at least are all I have been able to find on record or am aware of, and search has been made not only in our journals, and in those of Continental Europe, likely to have reports from malarial districts, but also in the *Indian Lancet* and the *Indian Medical Gazette*. Yet they are sufficient not only to prove the concurrence of the maladies, but also to point to some indications both in diagnosis and treatment.

In the first place, is there anything, except by means of the microscopical examination of the blood, by which we can recognize at the bedside the association of malaria and typhoid fever? Not with certainty; though we suspect it from the irregular course of the fever and the marked temperature variations, as happened in the first week in the case before you, and as also occurred in the first of Thompson's cases. We may lay also some stress on intercurrent chills. But you must not be deceived by these. Chills are observed in typhoid fever from other than malarial causes; they happen from pyæmic abscesses, from thrombosis of the veins of the leg, from otitis, at the beginning of an attack of typhoid fever as well as at the beginning of a relapse, after antipyretics that act decidedly, and sometimes without apparent cause. An instance of this we have had recently in the wards, in which a typhoid fever patient had a chill shortly after admission, but in whom repeated blood examinations failed to detect malarial organisms. What makes the case I am showing you particularly instructive is that there were no chills during the typhoid fever, though the evidence of malaria in the blood was pronounced. Other than irregularity of fever, and occasionally chills, there is then nothing in these cases of mixed infection by which to suspect their nature, and the course of the typhoid malady is not influenced; it only proves how necessary it is in all instances of

typhoid fever, especially of the irregular kind, to make blood examinations for malarial parasites.

There are a few more points that I should like to discuss with you, suggested by the subject we are investigating. One of these is that we may have malaria breaking out after the typhoid fever has completely run its course without this being a proof that the two diseases have coexisted. A person just recovering from typhoid fever is in so weak a condition that he falls a ready prey to malaria, if exposed. Again, if ever he have been malarial, the prostration the typhoid fever leaves may cause the long-dormant malarial poison to manifest itself during a protracted convalescence, as it may after any lowering disease. Another point is that there is nothing in the mixed infection which changes the course of the typhoid fever; it runs this course unchecked and with the same anatomical lesions, indeed, with the same symptoms, except it be with irregularity in the fever. Typho-malarial fever as a separate disease is no longer believed in by any observer; if it were, the cases now under analysis in which the microscope has positively demonstrated malarial organisms, while the clinical picture is that of an almost unchanged typhoid, would disprove the existence of a distinct malady produced by blending of the infections. The malarial germ does not, therefore, destroy or influence the typhoid fever germ; they simply coexist. The typhoid fever germ gives rise to its characteristic manifestations, only clouding for the time being, or to a considerable extent holding in check, those which malaria may give rise to. Further, it is evident that one kind of infection does not protect from the other. Nay, it is possible that both may be contracted at the same time, though not showing themselves simultaneously; for there is a difference in their periods of incubation, the poison of typhoid fever taking much longer before it exhibits itself.

The treatment of these cases of mixed infection is the treatment of typhoid fever with the addition of decided doses of quinine. These must be resorted to as soon as the nature of the malady has been made out; where there is irritability of the stomach quinine can be given hypodermically. The effect on the temperature may be seen to be striking, though the fever runs its course. Quinine should be continued, in small doses, during convalescence.

[The patient made a good, yet not a very rapid, recovery. He did not have a relapse, but a "post-typhoid fever," which yielded to getting him out of bed. There was nothing remarkable in the course of the typhoid fever, except that, as the disease progressed, constipation became a decided feature.]





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