

The amount of distension is sometimes extraordinary. "I saw not long since, in private practice," says Sir Dominick Corrigan, in speaking of the necessity of attending to the bladder in fever, "another case illustrating the same point. In this case the patient was a lady under the care of a homœopath. You know a homœopath would not use a catheter. It was on the fifteenth or sixteenth day of fever. I found her in epileptic convulsions, which had continued for some hours, foaming at the mouth, insensible, unable to swallow, and, to all appearance, dying. On examining the abdomen, I felt the bladder extending up as high as the umbilicus. On introducing the catheter, it was scarcely possible to bear the intolerable ammoniacal smell of the urine, which must have been shut up for several days. It continued to flow until some large basinfuls were drawn off. This patient recovered, but she suffered much from the neglect. Subacute and then chronic cystitis followed, under which she continued to suffer for more than a year afterwards."

In connection with the presence of uræmia in fever we have observed the urine in such cases to effervesce briskly on adding a dilute acid, and I have already mentioned a case of extreme subsultus in which the cerebral sinuses and the veins of the pia mater contained air in considerable quantity.

The most long-continued and violent attack of convulsions I ever witnessed was in the case of a student of this hospital, who had gone on to the thirteenth day of fever. The distended bladder could be felt; but such was the violence of the convulsions, attended with extraordinary priapism, that all attempts at catheterism were futile. It was also impossible to get the patient to swallow anything, or to use an enema, and under these desperate circumstances we determined to employ chloroform inhalation. The greatest difficulties attended the administration, but at last the effect was produced. The convulsions ceased like magic, and suddenly a jet of urine sprang upwards to a great height from the still erect penis; the stream continuing to flow until the bladder was empty, when the priapism disappeared.

We see, therefore, that, where the uræmic condition and its accompanying convulsions depend on mere *retention* of urine, we have a ready and efficacious remedy in careful and judicious evacuation of the bladder by the catheter.

But in *suppression* of urine our treatment must be different. Dry-cupping freely employed over the kidneys, the diligent application of poultices and sinapisms in the same region, the use of diluents, and the exhibition of a combination of nitre with the spirit of nitrous ether, are the measures in which you are to place most confidence.

It is also necessary to keep the bowels open by turpentine enemata, and the action of the skin may be stimulated by sponging with tepid vinegar and water and subsequent rubbing with a dry towel.

LECTURE XXXIII.

PHLEGMASIA ALBA DOLENS—The swelling is not always painful, or white in appearance—Symmetry of the affected limb not lost—Professor Trousseau's views as to the etiology of the affection—Phlegmasia (1) of puerperal women, (2) in serofulous and (3) cancerous cachexiæ—Pulmonary embolism caused by phlegmasia—Case of phlegmasia after typhus fever—TREATMENT of the affection—GENERAL CONCLUSION.

GENTLEMEN, you may remember my mentioning to you that a continued rapidity of pulse after the other constitutional symptoms of fever had subsided was to be taken, not—as suggested by Laennec—as a sign that the heart had been weakened, but rather as showing the existence of some acute organic change attended with irritation. I mentioned as examples of these changes two pathological conditions—one, the acute and sometimes general development of tubercle; and the other, that form of disease to which the name of PHLEGMASIA DOLENS, or PHLEGMASIA ALBA DOLENS, has been given.

We shall by-and-by examine how far the term "phlegmasia" is properly applied; and, although the disease is commonly more or less painful, it may occur so free from local suffering that its discovery is accidental; and so, as I have already shown, the adjective "dolens" is not always applicable. Again, in place of the swelling being colourless, the entire limb may be covered with deep purplish-blue arborescent stainings, so that the remaining portion of the term is not always appropriate. This, however, is less often met with than the absence of pain. The pain, too, may be singularly localized; thus, in a case which was under the care of an eminent physician, the pain was confined to the sciatic notch. The disease was held to be merely sciatica, and the actual cautery ordered to be applied over the nerve. In preparing to effect this the assistant accidentally exposed the opposite extremity, when he was struck by its comparative emaciation, and the real nature of the case was at once revealed.

This illustrates an interesting circumstance, which we have often observed—namely, that, though the swelling of the limb may be general, it has little if any effect on the symmetry of the part. The limb is simply larger and fuller than the opposite extremity, so that

it is often only by comparison that the morbid enlargement is recognized. I detailed to you a case in which symptoms of intermittent fever, which, however, was then epidemic, were present and exasperated by the use of quinine. Here the discovery of the nature of the disease was due solely to an accidental comparison of the lower extremities. The patient was not conscious of the existence of any enlargement or pain in the limb.

It is probable that this remarkable appearance of symmetry of the affected limb occurs more frequently when the disease is a sequela of fever than in other cases. Thus Professor Trousseau,¹ in speaking of its occurrence in tubercular and cancerous cachexiæ, refers to the irregular form assumed by the painful œdema in these affections.

In his lectures the same great clinical teacher dwells on phlegmasia alba dolens as a result of puerperal fever, and also mentions its occurrence in typhus and in typhoid fevers.

He inclines to the opinion that it results rather from a condition of the blood predisposing to coagulation in the veins, and their consequent obstruction, than to primary phlebitis. The result is what he denominates "painful œdema," which disappears either by the establishment of a collateral circulation or by the resolution of the clot. He gives some important facts showing that the existence of a phlegmasia alba dolens may have an important influence in the diagnosis of visceral cancer.

You may now ask how far the term "phlegmasia" is applicable to this disease, or whether the coagulation of blood in the veins is not the first step of the local malady, while the inflammatory condition is secondary and reactive. Certain it is that when a cordy and painful state of the veins, such as the femoral or saphena, exists, the moderate use of leeches over the vessel is advisable. This is true at least in the case where the disease occurs as a sequela of fever, and it is on this that our observations are based.

Now, whether phlegmasia occurring in puerperal woman is or is not due to the presence of uterine phlebitis and the extension of inflammatory action along the veins, producing obstruction of them, may be a question; but that actual primary or traumatic phlebitis is capable of obstructing a vein so as to cause painful œdema—in other words, phlegmasia dolens—appears from a case which occurred some years ago in our wards. It was of a patient labouring under an acute attack of visceral inflammation who was bled from the arm. The operator used a rusty and blunt lancet. The arm became painful and

¹ Clinical Medicine, vol. v. lect. xcv. New Syd. Soc. Translation.

tender along the course of the median basilic vein above and below the bend of the elbow. There was no swelling, but the type of fever changed to an asthenic form, attended by sweating and anxiety, so that the state of pyæmia was apprehended. This having continued for a few days, the arm suddenly swelled from above the elbow downwards, and presented all the characters of phlegmasia alba dolens. The constitutional symptoms subsided, and the patient gradually recovered.

Now, you know that ordinary phlegmasia dolens is seldom a fatal disease, a fact which may be accounted for by assuming that, as in the cachexiæ, the coagulation of the blood is the principal morbid condition, or that it acts in preventing the blood-poisoning by the localization of phlebitis. Be this as it may, it seems certain that the danger is inversely as the amount of swelling. I believe that in the case I have just now detailed suppurative inflammation of the vein was about to commence when coagulation put an end to further absorption.

In connection with this point I may notice that in certain forms of visceral irritation the bulk of the affected organ is greatly augmented. And it may be that this is caused by œdema, the result of venous obstruction. Thus in a case of croupous or plastic pneumonia which was brought before the Pathological Society of Dublin by Professor Robert William Smith the enlargement of the affected lung was so considerable as to simulate empyema; the side was much dilated and the liver depressed. Every air-cell seemed to be filled with minute granular fibrinous bodies, of which thousands were obtainable by washing the cut surface of the lung.

Trousseau has shown that the principal condition in the phlegmasia dolens is coagulation of blood in some venous trunk, and not, as has been held, an affection of the lymphatics. In this hospital we have verified his statement of freedom of the lymphatics and glands in the groin. You will do well to study his 95th lecture, in which, in addition to an exhaustive pathological account of the disease, he shows that, in the cachexiæ generally, hæmatologists¹ have established that there is a diminution of the red globules and an augmentation of the fibrin and serum of the blood. This condition predisposes to a spontaneous coagulation, the tendency to which we may well suppose to be still further increased by the presence of any phlebotic irritation.

I have told you that Trousseau explains the frequency of phleg-

¹ Andral et Gaverret, Recherches sur les Modifications sur les Proportions des quelques Principes du Sang dans les Maladies. Paris, 1842.

masia in the cancerous and tubercular cachexiæ by a reference to this fibrinous and leucæmatous condition of the blood, and it is more than probable that its occurrence as a sequela of fever depends on the same cause. In further support of this view I may recall the fact, also noticed by Trousseau, that phlegmasia is more common after enteric than after typhus fever, the longer duration of the former tending to modify the constitution of the blood to a greater degree. There can be little doubt also that the local abdominal irritation so common in the advanced stages of enteric fever, like the uterine irritation in cases of *phlegmasia puerperarum*, acts as an exciting cause in the presence of such a deteriorated condition of blood.

Viewing the question again from another point, it may be held that the affection following fever is the result rather of a state of blood predisposing to coagulation than of an original phlebitis. It has been observed that there is often little, if any, increase of local temperature, and the disease appears to differ from the secondary affections of fever in not presenting any well-marked signs of periodic retrocession. Still, as I have said, in cases where at an early period a cordy state of the femoral or saphena veins—accompanied by tenderness—exists, the application of a few leeches along the course of the vessels, fomentations, poultices, and the moderate use of opium are followed by good effects.

Professor Trousseau also alludes to the occurrence of pulmonary *embolism* in phlegmasia dolens in the male subject, showing that spontaneous coagulation may be developed in the saphena, crural, or any other vein, and remain limited to a very small extent of the vessel. He observes that generally the migratory clot reaches the lung, causing dyspnoea and rapid death by apnoea; but he believes that in certain exceptional cases the clot may be arrested in the right auricle or ventricle of the heart. He says that, in accordance with the predisposition of the patient and the volume of the clot, the phenomena which belong to syncope will be observed; the heart, surprised, so to speak, by the arrival of the migratory clot, will at once cease to beat with regularity and power, and ere long contractions will entirely cease. In these cases death will take place by syncope—by “arrest” of the heart—in fact, the prolonged syncope leads to death.

I have sometimes thought that this form of syncope was induced less by the “surprise” of the heart than by the sudden cutting off of the blood supply from the left ventricle. A case was some years ago presented to the Pathological Society of Dublin in which symptoms of heart disease were at last followed by a sudden and fatal syncope.

An indurated coagulum of a spherical form had entered the funnel-shaped sinus described by Mr. Adams, and completely occluded the left auriculo-ventricular opening, thus absolutely and suddenly cutting off the blood supply from the left ventricle.

Before I conclude this lecture I will read the notes of a very interesting case of the affection which has been engaging our attention. The subject of it was a pupil of Dr. Graves and myself at this hospital, who for many years since has enjoyed an extensive practice in the country. The facts of the case are given in the gentleman's own words. He says:—

For a great part of the years 1827, 1828, and 1829, I acted as clinical clerk to you and our lamented friend Dr. Graves in the Meath Hospital, during the protracted continuance of an epidemic of typhus fever, which we cannot easily forget. My principal business was to ascertain, as far as possible, the critical days of the fever, in the investigation of which you and Dr. Graves were deeply interested at the time. In this occupation it was my duty to spend several hours every day at the bedside of patients in all stages of the fever, and my immunity from contagion for so long a period led me to imagine that I had become absolutely *fever-proof*; but I was destined to be undeceived.

One morning in June, 1829, Dr. Graves called the attention of the class to a remarkable instance of *calor mordax* in a female patient. Of course there was a rush of the pupils to witness this unusual phenomenon, myself amongst the foremost. I had no sooner laid my hand on the burning skin of the patient's arm than I was conscious, by a sudden thrill or shock through my whole frame, that I was stricken by fever. That day and the next constituted the period of incubation. I was not actually ill, but I was languid, uncomfortable, listless—out of sorts in every way. On the third day I had a rigor, followed by an intense pain in the head, with nearly all the usual characteristics of typhus, including a full crop of petechiæ. (It is worthy of notice, however, that neither in this nor in several subsequent fevers had I ever the slightest delirium.) On the twenty-first day from the rigor I appeared to have a crisis, and a terrible crisis it was. I was suddenly seized with violent pain, apparently in the left hip-joint, and gradually extending to the leg and foot. The whole limb became swollen and glazed, presenting all the appearance of a leg affected with *phlegmasia dolens*, as no doubt it was. The pain was excessive and almost intolerable. For fourteen nights the most powerful opiates which could be safely administered failed to procure sleep, though they served, in some degree, to alleviate pain.

After about three weeks of acute suffering—six weeks from the commencement of the fever—I was enabled to leave my bed. But the swelling of the limb remained, and it was evident that there was permanent hypertrophy of the cellular substance. In all likelihood I was doomed to have a thick leg for life. For many years, too, I continued to have more or less pain in the hip, always increased by exercise. Some short time after my recovery from the fever the veins of the affected leg became varicose, and I had a varicose ulcer which remained open for nearly two years. This, however, was healed under the influence of country air and consequently improved health, and it has never returned. Once—about twenty years ago—a vein burst, and I lost a considerable quantity of blood. Since then I have persistently worn a bandage, and the veins have given me little further trouble. No special

remedies were adopted for the reduction of the swelling of the leg; but on one occasion Dr. Graves hesitatingly suggested a line of treatment to which, as it involved an undesirable contingency, I demurred.

I now come to a curious and interesting phase of the history of this thick leg. You recollect that the swelling of the leg appeared to be a sequela of one typhus fever. Exactly *thirty-one years* afterwards—that is to say, in June, 1860—I had *another* typhus fever, when you and Dr. Hudson kindly came to the country to visit me. (*How* I came to pick up this well-marked maculated typhus I never could divine. There was no epidemic fever of any description in the neighbourhood, nor had I seen a case of typhus for seven years.) Well, the result of *this* fever was to restore my thick leg to its original dimensions. There was no marked crisis. After two or three weeks of extreme danger, in which my life hung by a thread, the fever gradually subsided, and disappeared by the twenty-seventh or twenty-eighth day, leaving the affected leg as slim and emaciated as its fellow; and the hypertrophy has never since reappeared.

But this is not all. In the spring of the present year (1873) I had a severe attack of influenza, from the effects of which I have not even yet recovered. After two or three months of delicate health, during which my professional engagements prevented my having change of air, a blush of redness appeared over the middle third of the tibia of the varicose leg, accompanied by tingling pain, tenderness to the touch, and slight œdema of the leg. The redness gradually increased from day to day in extent and intensity, and from its upper margin a well-defined dark red line extended to the knee, where it abruptly terminated. Under the use of bark and iodide of potassium the redness and tumefaction subsided, and I then detected a hard ridge, apparently bony, and about three-fourths of an inch in length, on the inside surface of the tibia. At first I attributed these symptoms to *periostitis*; but when the œdema had almost entirely disappeared, I discovered that the "ridge" which I had believed to be bony was *not* bone at all, but a portion of obliterated vein like a piece of hard whip-cord and movable under the finger. Was this an attempt at a natural cure? I sometimes fancy that the varicose veins have diminished in fulness and bulk, though it may be *only* fancy.

Before I conclude I may be permitted to refer to a couple of facts which bear upon the vexed question of a *change of type* in fever and other diseases.

1. I was never strong or robust, and at the commencement of my first typhus fever, at the age of twenty-three, my health had been impaired by arduous study and close attendance on patients in a hospital atmosphere. And yet the treatment—which I maintain was *at that time* the correct and proper treatment—would not be adopted at the present day. After an unsuccessful attempt by poor Dan Pakenham (the worthy apothecary of the Meath Hospital) to open my temporal artery, a dozen leeches were applied for the relief of the pain of my head; and during the whole progress of this petechial fever I obstinately and successfully refused to swallow wine or any other stimulant whatever. Again, after twenty-one days' reduction of strength by typhus, and when phlebitis set in, I had a hundred leeches, in two relays, applied to the painful hip—without much apparent benefit, I admit, but still without killing me or causing any perceptible injury. What would happen under similar circumstances *now*?

2. I was placed under much more favourable circumstances when, at the age of fifty-four, I was attacked by my second typhus fever. I had previously been in good health, and was residing in pure country air. Never-

theless it was only by the continuous and lavish administration of stimulants—alcoholic and diffusive—that my life was saved. I offer no comment; is comment needed?

In this very remarkable case there are two circumstances of peculiar interest. One of these is the undoubted occurrence of a second typhus fever in the same individual after a long lapse of time, the malady setting in, in the absence of any of its presumed exciting causes; the other, the fact that the tumefaction of the limb, which had been of many years' standing, completely subsided during the second fever. It is also worthy of note that last year my friend's health had not been so good, as a result of which a cachectic condition of blood was established, and determined venous coagulation in the leg. At least this would seem to be the probable explanation of the recent attack of irritation and coagulation in the vein of the leg.

The treatment of this affection is sufficiently simple, and I have given you an outline of it as regards local measures. In the advanced stages the exhibition of iron is often most useful, the preparation on which I would specially place reliance being the "ferrum tartaratum."

In conclusion I would caution you against a possible error of diagnosis. In phlegmasia, when the œdema in lessening loses a certain condition of tension, the local sensation of fluctuation singularly simulates that of an abscess, even one near the surface. This is often more or less localized, and the surgeon who neglects the history of the case and the attending phenomena may commit the error of taking a diffused œdema for a localized purulent collection. I have known an operation to be performed in two situations in the same extremity; fortunately no bad result followed. A similar condition more commonly observed is where parotid swellings form in connection with the eruptive fevers. I have seen deep incisions performed on the same occasion at both sides of the neck in cases where the sense of fluctuation solely was relied on. One patient died of oozing hemorrhage under these circumstances, the bleeding setting every treatment at defiance. A fact such as this will show you that the caution I give is not unnecessary.

GENTLEMEN,—We have now gone over the principal facts connected with the great subject of fever and its treatment, and have been much occupied with the local affections referable to one or more of the large cavities; but I trust that the junior members of the class will not imagine that, as a rule, they are to put all the recommendations given into force in any one case, or that I would encourage any meddlesome or complicated treatment in fever. There are cases in which you will have to change your hand several times in the course of the disease; but the worst kind of physician is the man who, from his own timidity or want of confidence in himself, is constantly changing his treatment and interfering with his case. You may still meet such practitioners—I regret to say it, too frequently—physicians, who have not learned to look at fever as a whole, who do not recognize the law of its spontaneous subsidence, or the great fact—especially as regards the nervous conditions—that the toxic state is to be looked to more than any supposed organic change.

I remember a case of bad cerebral typhus attended by a gentleman who every day made a new diagnosis, and who at last gravely assured me that he had come to the conclusion that there existed *acute inflammation of the hippocampus major!*

You must engrave on your minds that fever, although often showing secondary functional or organic anatomical change, may run its course without such complications. In these simple, or so to speak normal, cases you have to see only that the patient is placed in the best condition as regards ventilation, cleanliness, and fitting nourishment; that stimulants are given when indicated; and that the state of the bladder and bowels is attended to. Should symptoms of local suffering occur, you are to meet them—at least in the first instance—as signs of functional rather than of organic disease, and seek to relieve them at the least expense to the system. You will remember what has been so often impressed on you here and in the wards—always to consider the *epidemic character*; and that in fever danger arises from debility—often an early effect of the poison; or, on the other hand, from the varied and inconstant forms of the secondary functional and organic conditions.

To conclude, it would appear that the more fever and its effects are studied—whether at the bedside or in the dead body—the less importance will be attached to anatomical change. It is to the varying condition of innervation and of the chemico-vital states of the fluids that the great phenomena of Continued Fever are to be referred.

In relation to the weighty question of *prognosis*, you will ever re-

member that the course of a fever will be favourable in direct proportion to the absence of anomalous circumstances—even though individually these may indicate freedom from disease.

APPENDIX B.

The following observations have been furnished me by my colleague, Dr. A. W. Foot, as bearing upon the subject of the use of the thermometer in fever in our medical wards.

The thermometer has been in daily use in the medical wards of the Meath Hospital for many years. Its value as a reliable clinical aid in the diagnosis and prognosis of acute disease, especially in essential fever, has been established as fully as it has wherever else this instrument has been habitually employed.

During the past three years, 1871, 1872, 1873, 9248 observations on the temperature of the sick have been made in the medical wards. The observations are made twice daily, at or about 9 A. M. and 9 P. M., by the clinical assistants, the practising pupils in charge of the cases, or the physician on duty, and are recorded on the clinical charts of temperature published by Harvey and Reynolds of Leeds.

Of the 9248 observations 3696 were upon cases of typhoid and typhus fever; the remainder were upon cases of simple continued fever, scarlatina, measles, variola (1026 observations), lung diseases, erysipelas, cerebral fever, etc.

Of the 3696 observations on typhoid and typhus fever, 2649 were upon typhoid and 1047 on typhus fever. It has to be observed that there has been during the three years above mentioned—1871, 1872, 1873—much less demand than usual for the admission of “fever” patients—in part perhaps owing to the intercurrent of the smallpox epidemic.

The 2649 observations in typhoid fever were made upon 70 cases. The highest temperature registered among these was 107.2° Fahr., and the lowest temperature 94° Fahr.

On 27 occasions temperatures of 105° Fahr. or upwards were registered in typhoid fever in 15 patients, and of the 15 patients in whom the temperature on one or more occasions reached 105° Fahr. or upwards, five died. On four of these cases whose illnesses had been marked by high temperature *post-mortem* examinations were made.

(a) A girl aged 16, temperature on 30th morning 107.2° Fahr., died on the 31st evening. Her mean temperature (51 observations) during the 26 days she was in hospital was 103.1° Fahr.

The morning temperature, 107.2°, was coincident with severe rigors, preceded by violent pain in the abdomen, ushering in peritonitis, not due to perforation, but to propagation outwards of the irritation arising from numerous and extensive ulcerations of the intestinal glands.

(b) A female, aged 24, who died on the afternoon of the 36th day. Her average temperature was 102.1° Fahr., but did not exceed 105.2° Fahr. There were 17 patches of ulceration in the last 53 inches of the ileum, pleuropneumonia of the right side with exudation of plastic lymph and sero-fibrinous fluid in the right pleural cavity.