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PHLEGMASIA DOLENS.*

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There is scarcely a condition in the life of woman which approaches nearer the boundary between health and disease than that of childbed, and no process shows more clearly the absence of well-defined lines separating physiology from pathology; yet, however easy and healthy the pregnancy and delivery may have been, however happily they may have run their course, every lying-in woman is in a high degree predisposed to puerperal affections. We propose in this paper to discuss one of the not very infrequent diseases affecting the puerperal state.

Definition.—Phlegmasia alba dolens is a painful swelling of the lower limbs in lying-in women, without redness.

Synonyms.—There are many synonyms: Swelling of the thighs and legs of women in childbed; milk engorgement; œdema of lying-in women; ischial milk abscess; puerperal and milk abscess; hydrophlogosis of lying-in women; hydrophlegmasia of the cellular tissue of the lower limbs; phlegmasia and leucophlegmasia; crural phlebitis; thrombotic puerperal fever; venous thrombosis of the thighs; phlebitis; milk-leg; œdema dolens; œdema lacteum; *dépôt du lait*; metastasis lactis; phlebitis cruralis *in puerpero*; and œdema of newly delivered women, etc. Phlegmasia dolens is by no means confined to puerperal women, nor indeed to females. It has been frequently met with in women consequent on the sudden suppression of the menstrual secretions; also accompanying malignant diseases of the womb. In the male it has been known to attend on dysentery; to follow diarrhœa, when ulceration of the intestines

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and disease in the hæmorrhoidal veins existed; to supervene on cancer of the rectum. It has also originated in external injuries: a blow on the shin has produced it; it has followed ulceration of the leg; operations—especially on the veins—and local exposure of the limb to cold. Mr. Trye, of Gloucester, claims he has seen it follow retention of urine and inflammation of the bladder; laceration of the perinæum and vaginal tract are frequent causes. Ramsbotham saw it follow a scirrhus prostate and diseased bladder. Diaz, of Madrid, reports a case of double phlegmasia dolens following childbirth during intestinal auto-infection, continuing through the puerperium. The anæmic condition of a patient after delivery, with placenta prævia, renders her liable to phlegmasia dolens.

Frequency.—Obstetricians are at such variance as to the frequency of the disease that one must be content to merely mention the opinions of a few. Some consider it of quite frequent occurrence, and others, of equal authority and experience, claim it is very rare:

Hugenberger.....	14	times among	8,036	puerpera.
White.....	4	“	8,000	“
Bland.....	5	“	1,897	“
Wyer.....	5	“	989	“
D'Outrepoint.....	3	“	518	“
Busch.....(1)	5	“	2,056	“
Busch.....(2)	1	“	4,124	“
Winckel.....	7	“	1,900	“

Lee collected twenty-eight in six years' practice; Robert de la Tour collected four times in thirty-six years' practice; Hevveau collected six times in twelve years' practice at maternity; Hagner collected two times during eighteen years' practice; Wilkinson collected two times during fourteen years' practice. I think the calculation of Sankey that once in two hundred cases is much too high; doubtless it may sometimes occur in the form of an epidemic, or it may follow the wake of certain epidemics, but only under these circumstances would it approach such figures.

Time of Appearance.—This disease usually makes its appearance from about the fourth to the eighteenth day after delivery. It may appear earlier or later, for White, of Manchester, has seen it as early as twenty-four hours after delivery, and another as late as five weeks; and Levret remarks that it has been observed to take place upon

the child being weaned—beyond the close of the year; it is claimed that Levret, however, had a theory to support by reporting this case, and it is not impossible that his zeal might have betrayed him into error. A case in my practice—a multipara—made its appearance in the sixth or seventh week after delivery in the left lower extremity, followed five weeks later in the other leg.

Symptoms.—The prominent symptoms of this disease can be described in two forms, one being with very little disturbance of the health, the other very grave; the latter is infectious in its nature, the œdema coming on with great rapidity, preceded by violent chills; temperature, both local and general, greatly elevated. Areas of erysipelas soon appear. Symptoms of deep abscess are present—in fact, the general symptoms are pronounced; milk and lochia are suppressed; pyæmia supervenes, and death closes the scene. This septic form is rarely encountered in these days of clean work in the lying-in chamber. The initial symptom of the simpler variety may be a chill, followed by some reaction, with a sensation of heaviness of the limb and a dull pain, increased by motion. The tongue is usually moist, somewhat coated, face pale, countenance anxious, and a great tendency to frequent and profuse perspiration. Lactation is much impaired, sometimes wholly arrested; yet the first symptom may be simply a pain in either the calf of the leg, popliteal space, the thigh, along the tract of the femoral vein or its principal branches; this is preceded for a day or two by a feeling of great lassitude and depression. As the disease progresses the tenderness becomes extreme; pain is increased by pressure and by movements of the affected limb, which is sometimes impossible for the patient. Both legs may become affected, but never in the two simultaneously; the interval between the attacks of the two legs, however, may be very short indeed, but never in the same day. The left leg is attacked most frequently, possibly in the proportion of three to one. The authors have suggested various explanations for this fact. The most plausible one of these theories is that of the position of the rectum on the left side, which must necessarily excite more or less pressure on the veins of that side; another is the arrangement of the arterial and venous trunks at the promontory of the sacrum, where the primitive iliac vein is crossed almost transversely by the right common iliac artery. It has been found in autopsical examinations that where the iliac vein contains a clot a very marked depression is observed in the clot at the point where

the artery crosses the vein. Mr. White appears to attribute this peculiar feature of the disease to the position of the body in labor. Ramsbotham to the different distribution of the right and left spermatic vein, the right terminating in the vena cava, the left in the renal. Spiegelberg gives as a possible cause, the left limb is more often varicose.

Swelling.—The onset of the pain is soon followed by swelling of the limb, either being general or progressive from below upward or from above downward. This swelling of the parts affected is constant, and one of the most prominent features of the disease; indeed, it is uncertain at times to say whether the swelling and pain have appeared simultaneously or the swelling preceded that of the most characteristic pain. Puzos, Levret, White, Gordieu, and others assert that the swelling begins at the upper part of the leg and gradually descends toward the foot. Trousseau declares that he has never seen the swelling progress in this direction, but that it always begins at the lower extremity and ascends toward the pelvis. Barker, Spiegelberg, and Bouchet say that neither assertion is absolutely true, but that in some cases the swelling begins below and advances upward, while in other cases the reverse occurs. Barker relates a case where the swelling was very great, but confined entirely to the thigh, and at all times during the course of the disease a shoe of the same size could be put on either foot. The swelling is generally very considerable, sometimes doubling the size of the limb. The skin is white, glistening, and so elastic that most authors have asserted that the swelling does not pit upon pressure; but Fordyce Barker says this is true if the finger be pressed on the swollen parts for only a moment, which would leave the pit in ordinary œdema; yet he has demonstrated at the bedside that if the pressure be made with some force, and prolonged for a minute or two, the pitting is then manifest, as in œdema. Loss of all muscular power of the limb is another characteristic of this affection. In some it is not only impossible to move the thigh or the leg, but also to flex or extend the toes. You may or may not have hard, knotty, painful cords traced along the course of the crural vein or its branches. There is a great discrepancy of statement as regards the temperature of the affected limb. Valleix, Graves, and Simpson assert that there is an increase of temperature where the swelling exists. Trousseau denies the presence of the temperature in the part affected. Barker is of the same opinion. Spiegelberg modi-

fies this somewhat by claiming that where the œdema develops slowly the temperature of the limb is not raised; a rise only accompanies a rapidly developing and marked œdema, disappearing soon in uncomplicated cases.

Progress and Duration.—The disease is one that develops rapidly, but further progress is slow. The swelling rarely remains tense for more than five to ten days, but the doughy œdema may continue for some weeks, and in a slight form may last still longer. The pain seems to disappear with the hardness, and, if nothing remains but the œdema, pain may be entirely absent and patient feel quite well. The mobility of the thigh increases in the degree in which the tension and pain subside. In some rare cases superficial or deep-seated suppuration may take place. Occasionally the swelling has been seen to pass into hypertrophy of the skin and of the subcutaneous tissue, as in the remarkable case of Sarah Rogers, reported by Thomas Chevalier, an illustration of which can be seen in Busey's work on *Lymph Channels*. Recovery is the most common termination of the disease. It may be complete, yet one is not exempt from the affection in future or subsequent labors.

Complications.—The complications can be summed up as pulmonary embolism, gangrene, erysipelas, purulent infections, and lymphangitis.

Pathological Anatomy.—It has been found that in the simple forms, when an opportunity for an autopsy presented itself, the affected limb revealed these conditions: The skin is always thickened; the connective tissue is sometimes found indurated, vascular, infiltrated with serum and lymph; the veins are generally obstructed by clots and inflamed. In the first stage clots alone are formed, and there is no inflammation of the coats of the vessels. In more advanced cases the coats of the veins are thickened and abnormally vascular; the external coat adheres to the surrounding connective tissue; the internal coat is reddened, often studded with fibrinous deposit. The obstructive coagula may now be softened to a pultaceous mass, often regarded as pus, but which is really the result of fatty disintegration.

The veins principally affected are the femorals and iliacs, less frequently the uterine, vaginal, and saphenous. The lymphatics are often enlarged, matted together by condensed connective tissue. The glands are generally enlarged and vascular. The cellular sheath of the arteries is infiltrated; all the vessels are agglutinated by in-

flammatory lymph. In the cases in which the septic character predominates the changes are more general and more distinctive. The clots in the veins are more disintegrated, the presence of pus is more decided in them, suppuration is common in the perivascular connective tissue, and the muscular fibers are softened. Peritonitis and metritis are common. Ovaries, tubes, and broad ligaments are inflamed. The kidneys, liver, and spleen are congested, and you may find pulmonary pleuritis, even hepatization of the lungs and pericarditis.

Pathology.—The pathology of phlegmasia dolens has given rise to much controversy, which has served to develop numerous specious theories. There was an attempt by R. J. Lee to establish a connection between erysipelas and phlegmasia, claiming that the opinion entertained by some that the clotting of blood in the veins as a cause is erroneous. Mauriceau attributes it to a reflux determined to the lower extremities of humors, which ought to be evacuated by the lochia. Mesnard advanced the same theory, while Puzos and Levret a little later thought it a metastasis of milk. White and Trye, in the latter part of the eighteenth century, ascribed the cause to an obstruction of the lymphatics and effusion of lymph; and a Dublin doctor, in the London *Lancet* for 1883, claims that the lymphatic gland in the crural canal forms a lost important link between the lymphatics of the trunk and lower extremities, that the absorption of septic matter takes place from the system by the lymphatics of the pelvis. The germs thus absorbed set up an inflammation, and inflammation produces hypertrophy. Hull, in 1800, criticised all these (except the latter), and offered the theory of an inflammatory affection, producing suddenly a considerable effusion of serum and coagulable lymph from the exhalants into the cellular membranes of the limb; that the seat of inflammation was in the muscles, cellular membrane, and inferior surface of the cutis. In some cases he thought the inflammation might be communicated from those parts to the large blood-vessels, nerves, and lymphatic vessels and glands imbedded in them. Tilbury Fox says it is a local disease. No general symptoms need be present, and that phlebitis can not give rise to phlegmasia dolens, but to œdema. He says it might occur in phlebitis, but forms no necessary part of it, that the obstruction of the main lymphatic channels alone is capable of giving rise to white-leg. Albers, of Germany, thought it to be neuralgia, causing œdema; Burns, an

inflammation of nerves and veins. The first great step made in advancing the knowledge of this disease from speculative theories to the domain of pathological science was by Dr. Davis, of London, in 1823, when he published his discovery that in several instances he had found, in making post-mortem examinations of the disease, that the femoral and iliac veins were impermeable from being filled with firm coagula of blood, which was very soon after confirmed by Bouillard and Velpeau, of Paris; in fact, some tables reverse the matter, and give Bouillard priority over Davis; from this discovery resulted the doctrine of crural phlebitis. Six years later Dr. Lee, of London, believed he had made a great discovery, maintaining that the disease is primarily a uterine phlebitis, commencing with the uterine branches of the hypogastric veins, and subsequently propagated to the iliac and femoral of the affected limb. The knowledge that this disease is not confined to the puerperal state or to the female sex was a great step in elucidating its pathology. The next step was made by the hæmatologists Andral, Gavarret, Becquerel, and Rodier, who demonstrated the existence of a peculiar modification of the blood in the cachexias, and that this modification often exists in pregnancy. There is a change in the proportion of the elements of the blood. There is an excess in the amount of fibrin and serum and a deficiency of the blood-corpuscles; as compared with the normal state, there is a special predisposition to coagulation. Vogel calls this abnormal tendency to coagulation of the blood inopexia, and it is known, says Barker, that whenever phlegmasia dolens occurs, whether in the puerperal period or in association of other diseases, there is inopexia. Virchow, in 1846, to Barnes, in 1865, thought it due to thrombosis of the iliac and crural veins; afterward the great Moxon, of Great Britain, gave us the theory of coagulation of blood in veins, secondary to a phlebitis, which is excited by noxious material absorbed from the uterine surface. Barnes says phlegmasia dolens, like perimetritis, is a variety of puerperal fever. It is a toxæmic disorder. They arise in similar conditions, and it may be held that at the moments of invasion it is uncertain what form the disease may assume; accidental conditions, not clearly defined, may determine the evolution into perimetritis, phlegmasia dolens, or general septicæmia. From the various views from Mauriceau to the present time we are compelled to conclude that the advances in pathology have not shed much light on this disease. Many things in common are advocated and

maintained—the doctrines of phlebitis, venous thrombosis, and inflammation and obstruction of the lymphatics; some hold that phlebitis is the essential lesion, some to peripheral thrombosis, others to the obstruction of the lymphatic ducts and venous thrombosis combined, and it is very difficult indeed to always strictly distinguish ætiologically. The lying-in state is exceedingly favorable to the coagulation of blood in the veins of the pelvis and thighs, the thrombi growing into the iliac and onward into the femoral and its branches. The starting point of the thrombosis is the placental surface of the uterus, and is most apt to occur when, through imperfect contraction of the uterus, the veins are left with gaping mouths. It may be a question whether the introduction of septic material induces the coagulation; but, in the usual absence of the general symptoms of septic poisoning, it may be doubted whether this has to do at least with the extent of the coagulation. This thrombosis of the veins induces a chronic inflammation of its wall, and we have a phlebitis secondary to the thrombosis. In other cases the process takes an inverse course, the inflammation of the connective tissue leading to the phlebitis and thrombosis; we find in either event a considerable adhesion of the vein to its sheath, and from the sheath to the parts around. The lymphatic vessels may be affected by this adhesion and partially obstructed.

Diagnosis.—The diagnosis of phlegmasia dolens is very readily arrived at from symptoms mentioned in this paper. We have the sudden onset of the pain and swelling, and the absence of the grave symptoms which usually accompany lymphangitis, erysipelas, and septicæmia.

Prognosis.—In uncomplicated cases recovery is the rule; in complicated ones it is regarded as a very serious affection. Sudden death from pulmonary embolic obstruction is among the possibilities. One should be reserved in his prognostications.

Treatment.—Absolute rest, with the leg slightly elevated, bandaging the affected extremity, and administering an abundance of easily digested food. Stimulants, such as carbonate of ammonia, and counter-irritation by iodine over the course of the affected vessels, are useful, in particular where the lymphatics markedly participate in the affection. Attend to constipation if it exists. If circumscribed abscesses present themselves, they should be opened and dressed antiseptically, and, in cases of diffuse subfacial phlegmon, make several long incisions to limit destruction of the deeper parts.

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