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# PUERPERAL SAPRÆMIA.*

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The parturient patient is exposed to animal poisons not only in the form of infective germs conveyed to her by her attendants, but also from certain toxines which accompany the process of putrefaction. Injuries occurring during labor render the tissues of the birth-canal in a peculiarly favorable condition for putrefaction, while fœtal death places within the body of the patient a mass of tissue ready to putrefy, and affording favorable material for the development of bacteria. A recent work upon pathology (Hamilton) calls attention to the fact that a patient may absorb toxines secreted by germs growing upon a putrefactive focus before these germs have themselves found their way into the blood. Such a condition of poisoning is termed sapræmia. The causes of this condition are those which produce necrosis of tissues, and introduce into these necrotic tissues infective germs. The fate of these germs will depend very much upon the condition of the patient's blood-serum. In some, the bacteria of suppuration grow luxuriantly, and abscess formation and pyæmia promptly follow: in others, while bacteria may flourish upon the patient's tissues, they fail to increase rapidly in number. The products secreted by these bacteria comprise the toxines of sapræmia.

Practically speaking, sapræmia is most often observed after tedious labor in which injury to the soft parts of the mother has taken place.

In fifty-three cases Winter observed twenty-five in women having contracted pelves: thirteen had abnormal presentation of the fœtus, and in but six cases were the pelvis and maternal soft parts normal. Labor was terminated in but one of these cases in twelve hours, the remainder continuing from twenty to one hundred hours in parturition. Close observation of the interval elapsing between the end of labor and the first symptom of poisoning shows that the danger of absorption begins ten hours after labor. Ahlfeld enables us to judge of

* Read before the Philadelphia Obstetrical Society, December 6, 1894.

the comparative influence of various obstetric operations upon the production of sapræmia, by his table from which we learn that manual removal of the placenta and membranes is most apt to be followed by sapræmia. Next comes perforation and extraction, then prolonged forceps delivery, and least dangerous are induced labor and version and extraction.

A familiar example of this disorder is seen in cases delivered spontaneously, where the patient may remain for some time without proper attention: these patients usually inhabit dirty dwellings which, with their contents, furnish abundant growths of the less poisonous bacteria. Very often it will be found that the patient has been subjected to examination without antiseptic precautions: in other cases, the patient has remained exempt from examination, but lying upon a bed anything but clean, and in surroundings best calculated to further the growth of bacteria. In some of these cases, hæmorrhage, by impoverishing the patient's blood, has rendered her peculiarly susceptible to rapid absorption.

An excellent clinical description of sapræmia is that given in 1880 by Matthews Duncan* who calls attention to the rapid effects following the absorption of sapræmic poison, and also to the prompt subsidence of the symptoms. The clinical signs of sapræmia are a foul discharge, fever, rapid pulse, with usually tenderness over the uterus. Rigors and delirium are present in severe cases. Pain is not a pronounced symptom; constipation or diarrhœa may be present, generally the latter. The comparatively sudden onset of the disorder, and the rapid pulse, give evidence of a toxæmic poison quickly absorbed, rather than the gradual development of bacteria. The pathology of this affection has been well studied by Bumm;† microscopic sections from the endometrium of such a patient show the outer layer of the endometrium swarming with bacteria, while just internal to this layer we find an abundant round-cell formation of granulation tissues which is the rampart thrown out by Nature to prevent the further penetration of invading micro-organisms.

Ahlfeld‡ in his excellent description of this form of puerperal sepsis makes the statement that in well-conducted Maternities, the number of cases of fever from auto-infection and sapræmia occurring during the puerperal period is greater than the number of cases having

* Matthews Duncan, *Lancet*, October 30 and November 6, 1880.

† Bumm, *Archiv f. Gynäk.*, 1891, Bd xl, Heft 3.

‡ Ahlfeld, *Zeit. f. Geb. u. Gynäk.*, 1893, Bd. xxvii, Heft 2.

fever from direct contagion. He further remarks that the mucous membrane of the uterus absorbs with extraordinary vigor its septic contents, the poison most often entering through the cervix and endometrium, and that next in rapidity of absorption is the mucous membrane of the vagina. His experience shows that the poison thus absorbed is often rapidly eliminated, frequently by the kidneys. Pathogenic germs present in the genital tract before labor find a favorable culture medium in the decomposing fluids of the vagina and uterus. Winter,* in describing the sudden occurrence of absorption and fever, narrates a case in which a sharp chill followed incision into the cervix. The pulse is remarkable in these cases for its rapidity which is not in proportion to the temperature curve. The patient first complains of sensations of heat, headache and languor, followed by sweating, and often diarrhœa: the prognosis, with these symptoms, Winter considers favorable, if the cases are taken promptly in hand.

The differential diagnosis of sapræmia in contrast with septicæmia and pyæmia may be stated briefly as follows: In sapræmia, the symptoms are those of the decided effect produced by the sudden absorption of a toxine: in septicæmia, the absorption is more gradual, and is aggravated by the rapid development of septic germs. These germs, proceeding from the uterus to its surrounding tissues, form the foci of infection in the various organs of the body. The course of the case of septicæmia is more gradual, the fever showing remissions and exacerbations. In pyæmia, the symptoms of septicæmia are further increased by the signs and symptoms of abscess formation: embolism and thrombosis cause multiple abscesses in the viscera or joints.

The treatment of sapræmia should be prompt and thorough. As the retained and decomposing tissue, from which are absorbed the toxines producing the disorder, is in the birth-canal, the first step is to effectually empty and cleanse this region. Matthews Duncan advises the introduction of the fingers within the womb, or that tenaculum-forceps be inserted, with which the obstetrician may endeavor to grasp retained and decomposing material.

For cleansing and emptying the uterus, the finger may be well replaced by the intra-uterine puerperal curette: as this is a douche-curette, the obstetrician is enabled to cleanse and antisepticize the cavity of the uterus while removing retained and decomposing material. Such a curette should be large, with an edge no sharper than that of a good paper-cutter, and made entirely of metal. Reference

* Winter, *Zeit. f. Geb. u. Gynäk.*, Bd. xxiii, Heft 1, 1892

to the histological studies of Bumm illustrates the effort which Nature makes to prevent the penetration of micro-organisms into the lymph-spaces of the uterus by forming a layer of granular cells beneath the germs. Remembering this fact, it is well for the obstetrician not to remove this layer of tissue with the curette, but to content himself with scraping the interior of the uterus with a blunt instrument, thus washing away bacteria and *débris*, while avoiding the opening of the lymphatics and blood-vessels of the uterus. In cases of sapræmia, this cleansing of the womb may often be done without an anæsthetic, as there is not in these cases the acute pain of beginning peritonitis. The antiseptic agent to be employed in this cleansing is, preferably, one of the phenols; carbolic acid, creolin, lysol, kresin or trikresol may be used: trikresol has the advantage of being colorless, exceedingly efficient, and free from poisonous effects, if used in solutions of one half to one per cent. At least a half gallon of the hot antiseptic solution should be employed, the douche-curette thoroughly but gently scraping the interior of the womb, while the antiseptic fluid thoroughly flushes the diseased tissue. It is unnecessary to use a tenaculum-forceps to grasp the uterus in these cases, and a speculum is also superfluous: the hand upon the uterus above the pubes can best appreciate the impact of the curette. There is no trouble in these cases in securing the prompt reflux of the antiseptic without the use of an intra-uterine catheter: the fluid will return freely alongside of the curette.

A comparative estimate of the value of sublimates and the carbolic substances in the treatment of sapræmia may be gained from the examination of a series of cases in which it is shown that of those patients who received sublimate douches, twenty-five per cent. had a normal puerperal period: of those who were treated by disinfection with carbolic acid, thirty-nine per cent. speedily recovered from sapræmia, and had a normal puerperal period. Following the antiseptic cleansing of the uterus, which should be done in the most thorough manner, it is advantageous to pack the uterus with iodoform gauze, or to leave within the uterine cavity a suppository containing sixty grains of iodoform, aristol, boric acid, or iodol. The further antiseptic treatment of the case consists in cleansing the external parts three times in twenty-four hours with sublimate solution (1 to 2,000), and in keeping a sublimate occlusion dressing over the vulva. If the disinfection of the birth-canal is thoroughly done, it will rarely be necessary to repeat it; should, however, exacerbation of fever indicate fresh absorption, the treatment should be repeated. In addition, the lymphatics of the peritonæum should be thoroughly drained by

saline purgation, and a copious amount of normal saline solution be given to the patient either by transfusion, by the mouth, or by copious rectal injections. Strychnine, ergot and alcohol are valuable aids in assisting the patient to resist the poison.

Sapræmia may seriously complicate labor where parturition is prolonged, and may furnish a positive indication for the speedy delivery of the patient. Interference in these cases is indicated not only in the interests of the mother, but in the interests of the child. Observation has shown that twenty-two per cent. of children during whose birth sapræmia occurs, perish from intra-uterine poison ; if observation of these cases be further extended to the ultimate results of this intoxication, a fœtal mortality of thirty-five per cent. has been recorded, as children who may survive birth in these cases perish subsequently of septic pneumonia, umbilical infection and septic disorders of the blood. The symptoms of sapræmia during labor are those already described in the puerperal patient. Spontaneous labor usually ceases, or uterine contractions become markedly deficient. In view of the increased risk to the child, it is well to deliver the mother in these cases with the least possible risk to herself, version, or the forceps being indicated. Increased risk in symphysiotomy occurs in these cases from the dangers of septic absorption in the symphysiotomy wound. In highly contracted pelves where labor is complicated by sapræmia, the child should be delivered by abdominal incision, followed by amputation or removal of the uterus.

The prognosis of post-partum sapræmia depends greatly upon the promptness with which the condition is treated. In fifty cases of this disorder, Winter had four deaths : nineteen of these cases had a normal puerperal period after the thorough cleansing of the uterus : twenty-seven had fever during their recovery. The prognosis of labor complicated by sapræmia also depends very largely upon the good judgment and skill of the obstetrician : when the condition is recognized, and the patient promptly and skillfully delivered, her chance for recovery should certainly be but little imperiled by this complication : when, however, she is allowed to linger in impossible labor, or is subjected to fruitless and violent interference, as in repeated forceps applications in contracted pelves, the mortality rate becomes high.