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THE EARLY DIAGNOSIS OF EXTRA-UTERINE PREGNANCY.[1]

By J. C. Reeve, M.D.,
of Dayton, Ohio.

No subject in gynecology, if, indeed, in any department of medicine, has made such rapid and substantial progress within the last decade, as extra-uterine pregnancy. Light is finally breaking in upon one of the most intricate and complicated of pathological processes, and by the extension of physiological knowledge, and by clinical observation, that which was an unsolvable riddle to former generations is becoming fully understood. The cause of humanity has gained equally with science. One of the most serious calamities which can happen to woman in connection with the transmission of life, one which is overwhelming in its effects and appalling in its sudden mortality, is at last deprived of much of its danger by the resources of therapeutics and the boldness of modern surgery.

The part which this country has taken in the advance of this subject is cause of pride and congratulation. The clear recognition of the necessity of laparotomy for rupture of the cyst, by Stephen Rogers, of New York,[2] marks an epoch in the history of the subject. Others had suggested this measure before, but he, more clearly and more vehemently, urged the necessity of this operation upon the profession nearly twenty years before it was executed. Parry's treatise, published in 1876, is another landmark. This gives the scattered knowledge of the times, ad-

[1] Read before the Ohio State Medical Society.
[2] Trans. American Medical Association, 1867.

mirably collected, presented, and commented upon. The scholarship, the judgment, the critical acumen of this little volume have won the highest encomiums from foreign writers, who have borne testimony to the great loss which medical science sustained by the author's early death. More recently, the application of electricity for causing the death of the fœtus, and thus by harmless means rescuing the patient from imminent peril and saving her from the dangers of laparotomy, has given renewed life to the study of the subject. This measure had in this country its earliest successes, and cures by it have since been so numerous that it has conquered for itself a position as a safe and reliable remedy, and as one of the glories of American gynecology.

I fully recognize the fact that a paper presented to an assemblage of practitioners should be based largely upon personal experience, and that doctrine should be illustrated, or theory enforced, by the recital of actual observations. I deplore, therefore, that I have not clinical experience to lay before you. Nevertheless, it is justifiable to present such a paper when the subject is one upon which but very few men have had a great deal of practical experience. Mr. Lawson Tait has had to do, ante- and post-mortem, with about seventy-five cases, yet he never had the opportunity of making an early diagnosis. Dr. Thomas has seen over thirty cases. These are the largest experiences of the world. Winckel, of Munich, all his life at the head of a large obstetrical and gynecological clinic, has met with but thirteen cases. The vast majority of cases of extra-uterine pregnancy have been reported by individuals who never saw one before, or have seen but a few cases. We are with this subject, then, exactly as we are with deaths from anæsthetics. But few men have had the misfortune to see more than one; no one has seen many of them. Still, from a careful study of the single cases, as reported by individuals, much of value has been learned as to the different modes in which the fatal accident occurs, and as to the best means of avoiding it. By such a study of isolated cases of extra-uterine pregnancy I attempt to present one portion of the subject. The whole subject is far too wide for complete consideration, and I limit myself to early diagnosis. My original intention was to take each symptom and note its presence or absence in each reported case, and then tabulate the results. A paper upon this plan would manifestly be complex and extensive, and probably not as useful as one in which the results of a careful study of cases are clearly presented, each symptom which may be present being considered in regular order. Such a paper I have attempted to prepare, impelled by the fact that the signs and symptoms of abnormal gestation are not so fully presented in the text-books as they should be. From the nature of things the majority of cases will fall first into the hands of the general practitioner, and he should be acquainted with the points of diagnosis that relief may be afforded the patient in due season.

Cases of extra-uterine pregnancy may be classified as follows:

I. A very small number present no well-marked symptoms, and go on to full term; labor sets in, and only then the true state of affairs is discovered.

II. A somewhat larger, but still a relatively small number, are first announced by the symptoms which speedily overwhelm the patient. Rupture of the cyst occurs, and death, by shock and hemorrhage, speedily ends the scene.

III. A large majority of cases, in which marked symptoms are present from an early period. Of these symptoms no single one may be pathognomonic, yet by a concurrence of several of them at once, or by several appearing in succession, a diagnosis may generally be made. It is to these symptoms that I beg leave to direct your attention.

First in order comes the probable existence of a pregnancy. The reflex signs of this condition are present; on the part of the digestive system, depraved or changed appetite, nausea, vomiting, salivation. The breast and nipples show the usual changes. As a general rule, the patient believes herself to be pregnant. This has been the case so frequently that some authorities hold it to be essential. Bernutz and Goupil found this feature absent but four times.[1] When the patient has already had children, her testimony is, of course, more valuable. I know of but one authority who discredits the value of this point in the history of a case. Mr. Tait, in his late work on ectopic gestation, expresses the opinion that no reliance can be placed upon it. Still, at a later period, in making a diagnosis of ruptured cyst, he lays due stress upon the probable existence of a pregnancy when the overwhelming accident occurred.[2]

There are two points to be noted in regard to the pregnancy. First. In extra-uterine cases a considerable period of barrenness has preceded its occurrence so frequently as to have attracted especial attention. The existence of a desquamative salpingitis, whereby the tubes are deprived of their epithelial lining and brought to a condition similar to that of the interior of the uterus, is maintained by Mr. Tait to be the leading etiological factor in these cases. The explanation seems reasonable and far more probable than that of an obstruction of the tubes. If, then, a patient is pregnant some years after the birth of a child, or becomes so only after several years of married life, the fact should receive due consideration. Second. The ordinary symptoms of pregnancy are likely to be exaggerated, especially those of the pelvis. In the language of Parry, "the pregnancy is a stormy one."

Next in order comes derangement of menstruation. There may be the amenorrhœa which belongs to the ordinary pregnancy, but much more

[1] Clinique sur les Maladies des Femmes

[2] Brit. Med. Journ., June 28, 1884, p. 1250.

frequently the flow is irregular and it may be excessive, and even continuous. Recurring gushes of blood occur, and, with pelvic pains, often lead both patient and practitioner to believe that an abortion is taking place. There will be often no further doubt upon this point should the decidua be expelled *en masse;* it is taken for a "mole" or "false conception," and looked upon as the termination of a miscarriage.

Examination of the pelvic region reveals, in many cases, great tenderness of one or the other iliac region or of the hypogastrium; there may be so much as to prevent a satisfactory investigation. Great pain at some point of this region may be complained of, and the pain radiates to the loins and down one or both thighs. There may be a febrile condition present and all the evidences of successive attacks of pelvic peritonitis.

A vaginal examination would of necessity follow such symptoms. In a case of extra-uterine pregnancy such an examination shows certain changes in the uterus and the presence of a tumor. The uterus is enlarged, in the earlier period, in proportion to the duration of the pregnancy.

It is displaced; the gestation cyst has pushed it to one side or the other, or forward so that the cervix is found close to the pubic arch. The os is patulous, the finger easily enters it. The uterus is empty. If amenorrhœa is present, the practitioner would, of course, hesitate to ascertain this by the passage of the sound; but when metrorrhagia exists, or the decidua has been expelled, there need be no hesitation. The tumor to be felt *per vaginam* presents some well-marked features which serve to differentiate it from anything else generally found in this locality. It is round, smooth, elastic, giving the sensation of a tense cyst, and, as a general rule, exquisitely tender. It is situated in close proximity to the uterus, yet generally can be made out to be independent of this organ. Two features demand especial attention. 1st. The vaginal wall over this cyst or tumor shows active pulsation; vessels can be felt beating by the finger. This feature was recognized long ago by Baudelocque. 2d. The size of this tumor can be observed to change within a comparatively brief period. The growth of a gestation cyst gives an increase in size more regular and rapid than belongs to any condition likely to be confounded with it. Thomas says it can be noted from week to week.

In addition to more or less of these symptoms, or, possibly, entirely independent of any of them, may come now attacks of severe pain with symptoms of collapse. The patient is found pale, faint, almost or entirely pulseless, with most severe abdominal or pelvic pain. She seems about to die, and the practitioner may be at a loss to account for her condition unless acquainted with the course of this form of gestation. From this collapse the patient may slowly rally, to suffer again in a short period from similar attacks. Different explanations have been given of these

severe paroxysms of pain, accompanied by profound depression of the vital powers. They have been attributed to contractions of the walls of the cyst and to uterine contractions. There is no doubt now that they depend upon partial ruptures of the cyst, or of vessels on its walls, accompanied by a certain amount of hemorrhage. Post-mortem examination of cases in which these symptoms have several times occurred, has revealed a collection of clots, the difference in age of which could be plainly seen.[1] The great practical fact is that a succession of these paroxysms may occur before the final and fatal rupture, which they most surely foretell.

In a patient presumably pregnant, having had more than one such attack as this, and having a tumor to be felt *per vaginam*, there could scarcely be a doubt of the existence of extra-uterine pregnancy. But one symptom more could add to the evidence. This is, the expulsion of the decidua. This membrane may be thrown off *en masse*, when it will be readily recognized. In the case under my observation I drew it on my finger like a thimble. It may be discharged piecemeal. The existence of shreds, therefore, in the uterine discharge of a patient presenting any of the symptoms detailed, should awaken suspicion and lead to a microscopic examination. The expulsion of the decidua is a sign of the highest value, and is, by good authority, even held to be pathognomonic.

Two symptoms may seem to have escaped consideration; they are ballottement and the effects of pressure upon the pelvic organs. They belong to a later period than that to which this paper is limited. Ballottement has been observed by Thomas as early, however, as the third month.[2] Only exceptionally can it be elicited at so early a period even by a skilful examiner. It should always be sought for; if present, it makes the diagnosis a matter of absolute certainty. Pressure symptoms, of course, become more and more pronounced as the case advances in age.

A diagnosis of extra-uterine pregnancy is to be made, then, by a careful study of the history and of the signs and symptoms of the case in hand. No one of the disturbances it occasions or the changes it causes is of very great weight when standing alone; occurring together, however, the value of each increases in a geometrical ratio. There is an order of occurrence, also, dependent upon the period or progress of the pregnancy which should be borne in mind. The value of a coincidence of the symptoms was recognized by Bernutz and Goupil, who taught that it was by an *ensemble* of symptoms that a diagnosis could be made. An interesting illustration of what is here presented was related by Dr.

[1] See paper by Dr. Johnstone, Journ. Amer. Med. Assoc., Oct. 27, 1888.

[2] Amer. System of Gynecology, vol. ii.

Hanks, of New York, at the meeting of the British Medical Association in 1886.[1] A gentleman, in a consultation, maintained that the case was one of extra-uterine gestation, but agreed to rest the decision upon a microscopic examination of some discharged membrane. This was reported not to be decidua, whereupon he averred his belief that a mistake had been made. A necropsy soon after proved that he was right. It is stated that the microscopic examination was made by a student.

A summing up of our knowledge upon this subject would seem to be that while in some cases of extra-uterine gestation a diagnosis presents the greatest difficulties, and in a small number it is impossible to make one, in the majority of cases it can be readily done and even more easily and certainly than that of a normal pregnancy. This has been maintained by the very highest authority, both in this country and in Europe.[2] Moreover, a diagnosis can be made at an earlier period than in a normal pregnancy. It has been made as early as the eighth and even as the fifth week.[3]

The symptoms which have been detailed may be classified partly in reference to the order of their occurrence, but especially as to their diagnostic value, as follows:

I. *Suggestive.—a.* The general and reflex symptoms of pregnancy, especially if the pregnancy had occurred after a considerable period of barrenness.

b. Disordered menstruation, especially metrorrhagia coincident with symptoms of pregnancy; gushes of blood, accompanied by severe pelvic pains.

c. Severe pain in the pelvis; attacks of pelvic pain followed by tenderness in either iliac region, and other symptoms of pelvic inflammation.

II. *Presumptive.—a.* The existence of a tumor; this tumor presenting the characteristics of a tense cyst, sensitive to touch, actively pulsating; steady and regular growth of the tumor to be observed.

b. The os uteri patulous, the uterus displaced and empty.

III. *Certain.—a.* Paroxysms of violent and overwhelming pain in the pelvis, with general symptoms of collapse.

b. Expulsion of the decidua.

It remains to consider the conditions most likely to be confounded with or mistaken for extra-uterine gestation. They are: abscess of broad ligaments; pelvic hematocele; retroversion of gravid uterus; a small fibroid or fibro-cystic tumor of uterus; a small ovarian or dermoid tumor; a parovarian cyst; tubal disease, as pyosalpinx; pregnancy in one horn of a uterus bicornis; intra-uterine pregnancy. It is not

[1] Brit. Med. Journ., Dec. 4, 1886, p. 1094.

[2] Among others: Berry Hart and Dr. Aveling, Brit. Med. Journ., December 4, 1886. Winckel, Lehrbuch der Geburtshulfe, 1889. Garrigues, Trans. Amer. Gyn. Society, 1882.

[3] Papers by Dr. Janvrin and Dr. Hanks, Trans. Amer. Gyn. Society, 1886, 1888.

necessary to go over these *seriatim*. While each may in some respects closely resemble the disease under consideration, other characteristics, such as rapid growth, paroxysms of severe pain, with a history of probable pregnancy, will serve for a differential diagnosis. Undoubtedly a pregnancy in one horn of a double uterus would present the greatest, if not insuperable, difficulties of diagnosis.[1]

The differentiation of extra- from intra-uterine pregnancy is also to be considered. It is most likely to be needed, however, at a later period than that to which this paper is limited. When the pregnancy approaches term there may be such an unusual thinness of the uterine walls that the child seems to be immediately under the skin, and this condition has caused mistake upon several occasions.

The warrant for presentation of this subject, based upon a study of reported cases rather than upon observations, has already been stated to be the necessity of directing the attention of the profession to the subject and laying before them the means of recognizing it. An awakened attention is the first step to diagnosis. In the case which fell into my hands,[2] I recognized that I had something the like of which I had never seen before, and only realized the truth when the extrusion of the decidua threw a sudden light on the case. And it is interesting to read of cases in which even eminent men were befogged until some new symptoms flashed the truth upon them.[3]

Still more necessary does it seem to present a careful study of this subject, since doubt has been thrown upon the possibility of an early diagnosis in one of the latest publications upon the subject.[4] This book emanates from one whose experience is the largest in the world. That with this large experience the author has never had an opportunity of making a diagnosis before rupture of the cyst is indeed a singular fact, as he himself recognizes. But because he has not had this opportunity, it is unscientific, to say the least, to throw doubt upon what other men have done and reported; and the statement he makes that extra-uterine pregnancy presents no symptoms other than, or different from, those of disease of the tubes, finds its negation and contradiction in almost every reported case.

This question of diagnosis has been complicated by that of treatment. To consider the latter is not within the scope of this paper; still, a few words are necessary as to this feature and as to the relation between the one and the other. After rupture of the cyst there is but one remedy —laparotomy. The only hope of the patient lies in prompt and bold surgery. Before rupture, electricity has afforded most excellent results; it can be applied by the general practitioner, and has not shown, so far,

[1] Thomas: Amer. Syst. Gyn., vol. ii. [2] Trans. Amer. Gyn. Soc., 1884.
[3] See Dr. Lusk's case, Amer. Journ. Obstet., 1881, p. 333.
[4] Tait: Lectures on Ectopic Gestation.

any evil effects or consequences. Still, there are those who advocate laparotomy as being the best measure even before rupture. Without questioning either their wisdom or their judgment, truth compels the statement that the advocates of surgical methods have displayed a partisanship which does not belong to science. The perils of laparotomy have been belittled, and the possible injurious effects of electricity have been magnified. Not only these, but the diagnosis of cases in which electricity has been successful has been repeatedly questioned, and the capacity of those who have observed them openly doubted. The position has been taken that because ballottement was not observed, or because fœtal bones were not afterward thrown off, there was no certain diagnosis. Most of the observations of the successful use of electricity were at a period before ballottement could be expected, and before fœtal bones exist. Those who thus doubt are in the position of those who would question a diagnosis of pleurisy with effusion, after recovery of the patient, because no liquid had been presented for inspection. Again, under applications of the galvanic or faradic current the tumor in the vagina has repeatedly been observed to become less tense and less tender, to cease to pulsate, its tenseness diminish and slowly disappear. Coincident with these changes, the sufferings of the patient have abated and she has been restored to health. Simply, the treatment confirmed the diagnosis. How often in another line do we pursue a similar course and accept the results without question. The nature of some tumor or ulcer is obscure; we submit the patient to a course of mercury or the iodides, and the lesion disappears. Its nature is then clear. Therapeusis has not confirmed, but it has made a diagnosis.

I present from Charpentier[1] the following list of diagnostic errors made by eminent men, premising, however, that most of these errors were made at a period which, in a subject upon which our knowledge is so rapidly increasing, may be termed remote:

Huguier, uterine pregnancy taken for extra-uterine; Schlesinger, same; Depaul, extra-uterine pregnancy taken for a fibroid; Dolbeau and Charpentier, extra-uterine pregnancy taken for a retroverted pregnant uterus; Fournier, case misunderstood until the introduction of the finger into the uterine cavity; Martin, tubal pregnancy with hæmatocele, no diagnosis; Boinet, diagnosis halting between ovarian cyst and extra-uterine pregnancy; Hutchinson, similar; Orth, two cases taken for hæmatoceles; Leven, hæmatocele; Capuron, Parent, taken for anteversion; McCallum, tubal, recognized only at autopsy; Walther, pregnancy in a double uterus, sound entered the empty cavity; Jobert de Lamballe, abdominal pregnancy taken for an ovarian cyst or a uterine tumor; Bricheteau, ovarian cyst taken for an extra-uterine pregnancy.

[1] Traité Pratique des Accouchements, 1883, t. i. p. 1044.