

*On the Signs of Pregnancy.* By T. ROMEYN BECK, M. D.,  
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THE *Signs of Pregnancy* have been repeatedly noticed by different writers during the last and present years, and a condensed analysis of the principal facts, or rather novelties, mentioned by them, may be of some use, as well in *posting up* the information afforded, as showing how far we are to rely on the indications that have been proposed. Among the more elaborate papers to which I shall refer, are Lectures on the Signs of Pregnancy, by M. Dubois, published in the *Gazette des Hopitaux*, and a paper by James Stark, M. D. in the *Edinburgh Medical and Surgical Journal* for January 1842, on the signs of pregnancy during the earlier months of gestation, and on the existence of a new animal principle in the urine during that state. This last writer confines his remarks to the signs of pregnancy during the first three months.

1. *Peculiar Sensations in the Breasts.*—"In almost every case, shortly after impregnation, peculiar sensations are experienced in the breasts. These have been generally described as a sensation of creeping or formication, with a fulness and heat in the interior, and an itching over the surface." Dr. Stark adds, that he has frequently been informed by those who have borne several children, that this was the sign by which they were first made aware of another pregnancy, and that it occurred before the suppression of the menstrual discharge.

2. *Suppression of the Menses.*—Dr. Stark is of opinion, that, in some instances, the menstrual discharge continues for a few months after impregnation, while in others it does so during almost the whole of pregnancy. In two cases seen by him he has no doubt that the discharge was natural, and not to be distinguished from the true menstrual flux. "In one case, a scrofu-

\* For the notes of this case, and most essential aid in its management, I am indebted to my friend Dr. Ludlow, one of the resident hospital surgeons.

lous woman, with red hair and fair skin, it continued always for the first three months after impregnation, and I witnessed this fact during three pregnancies. In the other case, the discharge was just as regular for seven months, when it stopped, but returned immediately on delivery. This woman was very swarthy, with black hair and eyes, and it occurred during two pregnancies. I have also seen coloured discharges attending the progress of pregnancy, but never was able to discover that they observed periodical returns." The reviewer of Professors Hamilton and Davis's works on midwifery in the same number of the Edinburgh Journal, although professing the greatest respect for the opinions of Hamilton, (who denied the possibility of menstruation during pregnancy,) arrives at a similar conclusion. "We believe, with Dr. Hamilton, that there never was, strictly speaking, such an occurrence, knowing as we do, that the true menstrual secretion proceeds from the interior of the uterus and Fallopian tubes, but we also know, that many cases have been recorded, on the most respectable authority, where a discharge much resembling the menstrual secretion continued during the whole of pregnancy, and more especially during the earlier months, which is an uncommon occurrence, and also that there are several cases on record where that function (menstruation) was alone performed when the females were pregnant."

"As pupils of the late Dr. Hamilton, we were deeply impressed with the truth of his convictions. But we were not long in practice before evidences so indisputable occurred, that it was impossible to withhold our belief that menstruation may occur during pregnancy."

3. *Breasts.—Areola.*—Almost immediately after conception the breasts enlarge, the glandular structure becomes developed, and one or more of the glandular lobules may be felt, hard, enlarged, and painful on pressure. The whole of these glandular lobules are not equally affected in a *first pregnancy*; in general two or three only in each breast. About the middle or end of the second month these hardened lobules become softened, and the breast presents a more uniform resistance to the hand. During the third month it gradually enlarges and milk begins to be secreted.

In women who have borne many children, and whose breasts remain flaccid, the only change observable at this period is, that the hardness of the lobular structure has disappeared, and that, though the breast remains soft and flaccid, milk may be drawn from the nipple (Stark). As to the changes in the *nipple* and *areola*, Dr. Stark concurs mainly in the correctness of those enumerated by Dr. Montgomery. The glandular follicles around the nipple become enlarged during the first month; but in a first pregnancy they are not found, presenting all their usual characters, until towards the end of the second month. They then assume, sometimes a paler, and sometimes a redder hue than the surrounding skin.

The change of colour in the areola commences at the end of six weeks, if the female be of a dark complexion, with dark hair and eyes; and the period

is later, according to the fairness of the skin. In all it is quite distinct by the end of the third month, but in neither is the tint so deep as after the fourth month (or the next menstrual period). These remarks apply only to a first pregnancy. In a woman who has borne children the areola, once produced, never entirely fades as long as she is capable of procreating. The glandular follicles, once enlarged, never completely disappear; and these, with the reddish white shining network of lines, form a union of signs which are produced by no known disease, and indicate unequivocally that the female has once been pregnant.

In a female who has had children and again become pregnant, the glandular follicles assume their enlarged appearance at the end of the first month. The areola also changes its colour nearly a month sooner, depending, however, somewhat on the nature of the complexion.

As to the objection urged by some observers, that the dark coloured areola may be present during certain diseases, and particularly of the uterus, while pregnancy is wanting, Dr. Stark remarks, that he has met with only three cases of this description, and here, although the coloured areola and nipple were present, yet there was no turgescence of the nipple, the areola was dry and wrinkled, and the glandular follicles were not enlarged. Lastly, he states, that, in some instances of pregnancy, there is an entire absence of all colour from the areola. In two cases then under his care, this was the fact, but all the other characters were well developed.

Such is Dr. Stark's testimony. The Edinburgh reviewer, whom we have already quoted, (vol. 57, p. 201,) distrusts the infallibility of most of these appearances. Dr. Hamilton placed great reliance on the turgescence of the areolar ring, yet, in a case quoted by the reviewer, this was actually present, with a dark areola, but no *enlarged glandular follicles*, and the patient proved not to be pregnant. She was indeed *menstruating* at this very time. The observations of Dubois are equally, if not more distrusting. The discoloration of the areola is often wanting in females of the fair complexion, and again it may be present, without impregnation. When the turgescence occurs, he fully agrees with Hamilton in deeming it a sure sign, but, unfortunately, in his experience it is rare, not having observed it in more than one case out of twenty. Lastly, the enlargement of the glandular follicles, so much relied upon by Montgomery, occurs but seldom, and he suggests that the subjects seen so frequently by the physician of Berlin (as he styles him) must have had some peculiarities which are not observed among the French. He even adds, that it occurs in females not pregnant, and is therefore disposed not to depend on any of these appearances taken separately.

4. *Abdominal Enlargement.*—This occurs very shortly after conception, and is then owing not to any increase in the size of the uterus, but to the sympathy of the stomach and bowels with that organ. This is manifested by nausea, vomiting and flatulent eructations, together with a windy distension of the bowels. It is rarely wanting during the first two months of

pregnancy; but while the abdomen is thus tumid, there is also a peculiar flatness over the anterior, and what would otherwise be, the most prominent part of the swelling. "This peculiar flat tumidity of the abdomen, is most observable during the first two months; and in general, after this period, disappears to such an extent as to make it doubtful if the person be pregnant." About the middle, and certainly at the end of the third month, a fulness at the lower part of the abdomen becomes manifest. (Stark.)

5. *State of the Uterus.*—"During the first two months, the volume of the uterus gradually increases; its body becomes somewhat rounded and inclined backwards, whilst its neck approaches nearer to the vulva, and comes more within the reach of the fingers." This is Orfila's description, and it corresponds with the observations of Dr. Stark. He also denies that the uterus actually descends into the pelvis during the first months. The sinking is only apparent, and has been correctly ascribed by Madame La Chappelle, to the increase in size of the fundus, which is as yet prevented from rising out of the pelvis.

Dr. Rigby, (Midwifery, American edition, p. 40,) suggests that the soft feel of the portio vaginalis of the cervix uteri, is one of the earliest signs. In the unimpregnated state, it is hard and almost cartilaginous to the feel. From pregnancy, it becomes softer and larger.

According to Dubois, the gradual obliteration of the neck of the uterus, so constantly mentioned by authors, is not invariable. P. Dubois examined the body of a female who died in the eighth month; and the neck was found as long as it is usually in the first month. Indeed it sometimes preserves its length throughout the whole period of gestation. A female presented herself at the Clinique in the last stage. P. Dubois found the neck but little shortened, and hence pronounced her wrong in her statement. Labour pains, however, soon came on, and these rapidly diminished the length of the neck, and were shortly followed by delivery.

6. *Motion of the Fœtus. Quickening.*—The earliest period at which this is felt, is the eleventh week. If a female asserts its earlier occurrence, she has been deceived. Dubois corroborates the statement, that it is sometimes not experienced throughout the whole term of gestation. This sign is, however, of little value in medico-legal cases. A suspected female will hardly speak of it while on examination; various diseases have been mistaken for pregnancy. (Dubois.)

7. *Lividity of the Vagina.*—This sign, which was brought into notice by Duchatelet, on the authority of Jacquemin, has attracted considerable attention. Dubois has never been able to satisfy himself of its value; but he candidly adds that his opportunities have not been similar to those of Jacquemin. He doubts whether it is an *exclusive* sign of pregnancy. It may be seen with a speculum immediately after the cessation of the menses; and again, it may be caused by several diseases. Dr. Malvani, on the other hand, at the meeting of the Scientific Congress, held at Turin in September,

1840, stated that he had found this lividity to be a constant attendant not only of pregnancy, but of the puerperal state. His situation as attending physician to a hospital containing females labouring under the venereal, gave him many opportunities of verifying the frequent occurrence of the sign. In some it was not very manifest, until after the second month of pregnancy.—(*Archives de la Médecine Belge*, vol. iv. p. 216.)

8. *Auscultation.* During the first ten weeks after conception, Dr. Stark has never been able to detect the *placental souffle*, but he has noticed it in the beginning of the eleventh, and very distinctly in every case that he has examined, towards the end of the twelfth week. This corresponds with the observations of Kennedy, although contrary to those of Montgomery and Velpeau. (Stark.)

According to Dubois, this sound is dependent on the circulation in the vascular tissue of the uterus. He therefore objects to the term in use, and prefers that of the *uterine souffle*. Consequently, he asserts that it changes its situation. Its intensity also is variable, being more marked on some days than on others; and during labour, it is enfeebled or suspended by the contractions of the uterus. It is ordinarily first observed during the fourteenth or fifteenth week, although it may be noticed earlier, should the fundus rise previous to that, above the upper brim of the pelvis.

Valuable as this sign is in early announcing the presence of pregnancy, Dubois is still not disposed to consider it an infallible one; but asserts that it occurs in cases where fibrous tumours are present in the cavity of the uterus, unaccompanied by pregnancy. The fœtus also may die during gestation, and the uterine souffle continue. The reader will observe that these statements necessarily follow as deductions from the cause assigned by our authors. On the action of the fœtal heart, (*doubles battemens*,) he relies much more strongly as a sign. He adds, however, nothing new to its history.

9. *State of the Urine.*—(A) Donnè announced to the Academy of Sciences at Paris, in May 1841, that he had ascertained from a great number of experiments, that the urine of pregnant women contains much less uric acid, phosphate and sulphate of lime, than that of others not pregnant. (See *American Journal of Medical Sciences, N. S.*, vol. iii. p. 218.) The inference is, that part of the calcareous salts commonly found in the urine, is required for the formation of the bones of the fœtus. M. Lubanski confirms this by his own experience. He sent the urine of a female, in whom neither the touch nor auscultation afforded any proof to Donnè. The peculiarity was present, and in about a month afterwards the patient miscarried of an embryo of apparently the third month. In another instance Donnè examined the urine of a female for a totally different object. He found the usual quantity of precipitate. A short time afterwards, repeating his experiments upon another specimen, he discovered a notable diminution in the precipitate. From this he suspected pregnancy, and the result justified his suspicions, for

she had an abortion three months afterwards. "All authors," says M. Lubanski, "who have written on embryology, consider ossification as taking place on the fifteenth or thirtieth day after conception. This new formation of osseous parts can only occur at the expense of the mother. It is therefore quite logical to endeavour to ascertain whether the calcareous salts of the urine of the mother are diminished."—*Annales D'Obstetrique*, quoted in the *London and Edinburgh Monthly Journal of Medical Science*, vol. ii. p. 206.

(B) *Kiesteine*. The number of this journal for July last, (*American Journal of Medical Sciences, N. S.*, vol. iv. p. 13,) contains an interesting and valuable paper on this sign by Dr. Elisha K. Kane. The reader will find in it the results obtained by Nauche, Eguisier, and Golding Bird, followed by the observations of Dr. Kane on a greater number of cases than were noticed by all the preceding physicians. The whole paper deserves a careful perusal, and I will refer to only a few points particularly bearing on legal medicine. Out of 85 pregnant females whose urine was examined, he obtained a well marked kiesteine pellicle in 68; in 11 it was observed in a modified form, while in 6 it was wanting. Of these last, two were labouring under severe diseases. The cheesy odour was noticed in 7 cases only. Kiesteine was detected in one case by Dr. Kane as early as the fourth week, and in another before the fifth, while in several it was present before the end of the third month.

Having thus unequivocally proved its presence during pregnancy, Dr. Kane next proceeds to inquire whether it can be deemed diagnostic of that state, and peculiar to it. Without being aware of the results obtained by Mr. Letheby, (*American Journal of Medical Sciences, N. S.*, vol. iv. p. 223), he confirms them in a striking manner. Out of 94 females in a state of lactation, 42 presented no indication of it, 8 a scum imperfectly modified, and 44 the perfect pellicle. This last occurred most frequently between the period immediately after delivery, and the free discharge of milk from the breasts. So, also, it was found when suckling was temporarily interrupted by local obstructions; and also of the above number 8 out of 10 females exhibited it at the *period of weaning*. The inference of Dr. Kane would thus appear to be well founded, viz., the kiesteine is not peculiar to pregnancy, but that it may occur whenever the lacteal elements are secreted, without a free discharge from the breasts.

In a few instances of advanced phthisis he observed a pellicle bearing some resemblance to kiesteine. Out of 30 cases, 4 were of this description. It is, however, much slower in forming than the pellicle of pregnancy. That occurs within a day or two.

Dr. Stark has also frequently noticed kiesteine during pregnancy, yet occasionally it was wanting, and particularly in the later months. He has observed it quite distinct at six weeks after conception.

I add, in conclusion, the following discordant results by (apparently) Ita-

lian physicians. Turchetti has repeated and varied Dr. Bird's experiments, and arrives at the following conclusions:—Kiesteine is found in the urine of non-pregnant as well as in that of pregnant women; it exists in women labouring under inflammatory complaints as well as in those in good health; it is seen both before and after puberty; it has in all cases the odour of caseine, but this is stronger in the urine of females who have reached the age of puberty; it is seen sometimes in females who are nursing, and lastly, it is never seen in the urine of men.

Dr. Cenni, on the other hand, has never found the kiesteine fully formed before the fourth day, and this applies equally to non-pregnant and to pregnant women. Its existence is not constant, and to find it, the urine must be kept either in a hot or a cold place. He also found it in the urine of men, but here it does not cover the whole surface. It has rarely, either in men or women, the odour of caseine.—*L'Examineur Médicale*, Oct. 3, 1841, quoted in the *London and Edinburgh Monthly Journal of Medical Science*, Dec. 1841.

(C) *Gravidine*. When the urine of a pregnant woman is allowed to stand for some time, it deposits a copious sediment of a white colour, and this is made within a much shorter time during the first four months of pregnancy than after that period. On collecting it, Dr. Stark was unable to detect the presence of either albumen or caseine in it by the ordinary tests, and yet he ascertained that if milk was added to the urine in considerable quantity, its caseine could be detected by acids. He also found that this peculiar matter could be completely removed from the other ingredients by agitating a portion of the urine with ether. After satisfying himself by a series of experiments that this sediment, thus separated, was not identical with either albumen, caseine, fibrine, or gelatine, he considers himself warranted in considering it as a new principle, to which he proposes the name of *gravidine*, both from its occurring during pregnancy, and its falling to the bottom of the vessel.

Dr. Griffith, of London, is the only writer, so far as I am aware, that has particularly noticed the observations of Dr. Stark. He denies the existence of this principle, and asserts that there is in the urine of pregnant women a large number of globules, while the deposit consists of lithate of ammonia. To the union of these perfectly distinct substances, and Dr. Stark's experiments on them, Dr. Griffith ascribes the results obtained. Both are insoluble in ether, but remain suspended in it by agitation. If the sediment be boiled in water, and filtered while hot, the lithate of ammonia will be obtained perfectly pure, and the globules can be washed off the filter. Dr. G. also endeavours to show, from the account of Dr. Stark's experiments, that the tests used by the latter gave the characteristic results of lithate of ammonia.

I may add that Dr. G., who informs us that he has for some time devoted himself to an examination of the urine in pregnancy, states that he has con-

stantly observed the caseous odour, so much so, indeed, that he considers it almost as characteristic as the kiesteine. "I think," he adds, "we can fully account for Mr. Letheby's getting a putrefactive odour, instead of the caseous, as he uses too high a temperature."—*London and Edinburgh Monthly Journal of Medical Science*, July, 1842.

On a review of the observations now collected together, it may appear to the superficial reader that a great uncertainty still exists concerning the signs of pregnancy. But let it be recollected, that most of those which have been noticed, occur in the earlier stages, precisely the period when doubts should always be entertained in medico-legal cases. The value of auscultation is, however, more and more appreciated, and, at advanced periods, actual examination of the parts seldom fails to indicate their real condition. The other signs are valuable as important accessory ones.

Cases like the following are scattered through the annals of criminal jurisprudence, and they teach but one lesson. "During the French Revolution, a young French countess was imprisoned on suspicion of carrying on a treasonable correspondence with her husband, an emigrant. She was condemned, but declared herself pregnant; two of the best midwives in Paris were ordered to examine her, and they declared that she was not pregnant. She was accordingly guillotined, and her body taken to the School of Anatomy, where it was opened by Baudelocque, who found twins in the fifth month of pregnancy."—*Rigby's Midwifery*, p. 98.