

THE USE AND ABUSE OF PITUITRIN IN OBSTETRICS.

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PITUITRIN was first used in obstetric practice five years ago, and its rapid acceptance throughout the obstetric world attests its merits. The work of the brain surgeons has stimulated the physiological chemist's investigations of the pituitary body, and while there is some definite knowledge of its physiology, its apparent influence upon metabolism and growth is not understood and its physiological relation to other ductless glands and to the functions of special organs and systems of the body are yet matters of speculation. Experimental studies of the effects of extracts of the posterior lobe when injected into human beings and the lower animals seem to prove that blood pressure is raised from 20 to 40 m.m. of mercury for a half hour or more; that gradual diminution of respiratory movement to the point of cessation is soon followed by gradual return of respirations; and that unstriped muscle tissue, wherever found, is sensitized and stimulated. This latter effect is noted upon the heart, the intestines, the bladder, and especially upon the uterus. Whether the diuresis noted results from direct action upon the kidney cells or from its circulatory effects is not known. The pituitary gland, like all the ductless glands, offers a most interesting field for the experimental physiologist. Our problem, however, is a practical consideration of the use of this newly found agent in obstetric practice. Reports of this use of pituitrin are rapidly accumulating and its selection for your discussion to-night is for the purpose of learning your experiences and thus to more clearly define its limitations and possible dangers, as well as its usefulness. Culled from the numerous reports we find

the following disagreeable or dangerous results following the injections of pituitrin—nausea, vomiting, vertigo, and tinnitus, more frequently observed in weak anemic patients; more serious results have been collapse, uterine atony and hemorrhage, contraction of the cervix, tetanus uteri, ruptures of the uterus, unnecessary lacerations of the cervix and vagina, premature detachment of the placenta, asphyxia of the infant sometimes fatal. Its inefficiency in treating or inducing abortion is generally noted, and in the treatment of incomplete abortion, even with a dilated os, it is not believed to be as efficient as ergot. Used alone for the induction of labor prior to or at term it has failed to demonstrate any real value, in large numbers of cases, especially in primiparæ. When uterine contractions have been instituted by other means its action then appears. This action is almost nil in the first half of pregnancy, and progressively increases until its greater efficiency is manifested in the second and third stages of labor. It is said to sensitize the uterine muscle to its normal stimuli, rather than actually to induce contractions.

After an injection the intervals between contractions are lessened, the first pains are often prolonged, and may be tumultuous in character, with the attendant dangers to the mother and child. The innumerable reports of rapidly and safely terminated labors constitute the real danger of the obstetric use of pituitrin at the present time. Reports of accidents following its injudicious use are growing more frequent. Widespread discussion of the limitations of its use, and a clear understanding of the class of cases in which it may safely be used are in order. That it has a place in obstetrics and has come to stay is certainly the experience of every one who has had a wide experience with it, tempered with and guided by good obstetric judgment.

Pituitrin's Safety Zone in Obstetrics.—As far as our knowledge and experience has taught us, the ideal safety zone would include the following class of cases. Multiparæ, with histories of previous normal labors in whom there are no serious cardiac, cardiovascular or nephritic degenerative changes; the second stage of labor has begun; the presentation and mechanism are normal; the bag of waters is unruptured; the vaginal canal relaxed. One intramuscular injection of 1 c.c. of pituitrin will, in such a case, usually, in almost magic manner, end the labor within the hour. For the sudden and violent pains induced, ether analgesia is always employed, and to forestall the real danger of uterine relaxation within an hour after delivery, a hypodermic injection of aseptic ergot is always to be given immediately after the birth of the child. It has been repeatedly stated that

pituitrin is always contraindicated when labor is progressing normally, but for the particular class of cases just described, I believe its use is justified, even with a normally progressing labor, for the avowed purpose of shortening the hours of suffering to a very few minutes. During those minutes ether administered to the degree of producing temporary unconsciousness at each recurring pain will produce amnesia, prevent nerve exhaustion, and relieve pain. This method for multiparæ, some of my patients have designated the "afternoon" or "midday jag," which they say and I believe is far superior to "twilight sleep." The only inconvenience observed from this method is an occasional increase in after-pains, the inconvenience of which the patient endures when such pains are explained as "blessings in disguise" to prevent undue bleeding and promote involution. Codeine or morphia in small repeated doses throughout a day will relieve these after-pains if extreme.

Pituitrin's Danger Zone in Obstetrics.—The danger zone of pituitrin in obstetric practice must be approached with more circumspection and requires more detailed study. The gravidity of the patient, the condition of the uterine muscle, especially of its lower segment and of the cervix and the vagina; the history of prior Cesarean section; the presentation and position (whether face, brow, shoulder, twins, breech, arrested posterior position) and a study of the mechanism and its progress; the size and shape of the pelvis; the presence of tumor or placenta previa, hydrocephalus or monster; knowledge of the patients general condition that would be jeopardized by a rise, even for a short period, of her blood pressure, such as toxemia, myocarditis, arteriosclerosis or grave nephritis—all these factors in obstetric diagnosis, should be known and appreciated and may render the use of pituitrin a highly dangerous addition to the careless or fearless obstetrician's equipment. Some of the conditions just enumerated occupy border-line positions of danger and deservedly require further discussion. For examples—the full or half initial dose to primiparæ; the desirability of using pituitrin in preference to forceps in posterior positions, or when there is minor degree of pelvic disproportion, to insure moulding and adaptation before difficult forceps deliveries; its use in certain types of placenta previa, and even in eclampsia.

The most serious contraindications, to my mind are mechanical obstacle to labor and an undilated and unyielding cervix. For the former the slow adaptation and moulding under nature's unaided guidance provides safety not to be obtained by the sometimes and unexpected violent and tumultuous action of pituitrin. While it is true that the

mechanical dilator has taught us that the danger of lacerating a cervix is greatest when the dilatation is at the last stages, pituitrin in the earlier stages finds a mechanical obstacle in the cervix and its greatest danger then is to the child and the placenta. It has been my practice never to give more than half-doses to primiparæ prior to complete dilatation of the cervix and when moderate disproportion exists the slow skilled use of forceps is preferred. It has been claimed that pituitrin, by reducing the frequency of forceps deliveries, has won a triumph in thus avoiding shock, injury to the child's head, and serious injuries to the soft tissues; by diminishing the risk of infections and saving hours of suffering. In difficult forceps, its preliminary use has rendered the operation easier through better adaptation and engagement of the head. These arguments hold good for multiparæ, and for primiparæ after satisfactory dilatation of the birth canal, in whom inertia has developed and the indications for forceps are present. The same obstetric judgment required for the timely forceps delivery will often choose pituitrin with advantage to the patient. The glamour of pituitrin, however, should not make us act too soon. Let us always remember that in the group of cases with slight mechanical obstacle *uterine inertia* is the indication for pituitrin as it is for forceps. To correct abnormal mechanisms, the value of vigorous uterine action is well known and pituitrin again finds a valuable field in posterior positions of the occiput delayed at the inlet or to assist anterior rotation of the occiput or face. The inertia of breech or twin labors or when there is hydramnios furnish other important uses for this agent. Its value in placenta previa after bag insertion or version is unquestioned, and its careful use in half doses after the bougie has evoked pains in induced labors has certainly been of advantage in my experience. A very large proportion of multiparæ at term can be safely thrown into active labor by manual dilatation of the cervix to incite pains which will persist and grow stronger rapidly under a full dose of pituitrin. After the effect of this dose has worn away, in one to three hours, the cervix is fully opened and a second dose will rapidly terminate the labor. For the control of postpartum bleeding and to promote uterine contraction during Cesarean section my experience has taught me not to rely upon it alone but to always combine it with ergot, for I have had several experiences that make me believe the dose of pituitrin, while acting much more quickly than ergot, loses its effect more promptly and gives one a false sense of security that sometimes offers a rude awakening when the ergot is omitted.

The possible dangers of administering pituitrin, when grave struc-

tural changes in important organs have resulted from such diseases as myocarditis, arterial sclerosis, chronic nephritis, and profound toxemia with or without eclampsia, have not been definitely determined by experience. Until our knowledge is greater these diseases had better be classed in the danger zone.

Effects upon the Infant.—Slowing of the fetal pulse is observed, after the mother has exhibited the signs of absorption of pituitrin. Before the effects upon the mother have begun to wane, the fetal heart-beat resumes its normal rhythm. At birth, the infant is sometimes pale, and there may be evidences of meconium discharges. These effects, probably due to the effect of the drug upon the cutaneous circulation and upon the muscular coat of the intestines, are more likely to appear when the dosage has been excessive, either in size or frequency. In my experience they have not been observed when the total dosage has not exceeded 2 c.c. and the interval between doses has not been less than two hours. The relation between fetal asphyxia and violent and prolonged action and overdosage with pituitrin is one to be borne in mind. I have credited my experience of freedom from asphyxia to the facts of careful dosage and the invariable use of ether with the onset of vigorous, prolonged contractions. Ether apparently checks the tumultuous character of the contractions and at the same time relieves the extreme suffering.

The danger of detachment of the placenta, following violent and prolonged uterine contractions, in the earlier stages of labor must be a real danger, such cases have been reported.

Dosage.—The efficiency of the various preparations seems to be increasing with proper standardization. Pituitrin in 1-c.c. ampoules has with very few exceptions been efficient. It should not be used after the date specified on the container.

The tumultuous action sometimes observed from a full dose, whether due to the patient's susceptibility or to failure in standardizing the particular dose, has made the use of a full initial dose in primiparæ infrequent in my hands. The first dose usually shows more marked effect upon the uterus as it does upon blood pressure, unless there is an interval of three or more hours between doses.

If pituitrin were dispensed in doses equivalent to half the present dose, its usefulness would not be diminished; its dangers would be lessened.

An analysis of 106 cases in private practice offers the following facts:

(a) Primiparæ, 40 per cent. of the cases; multiparæ, 60 per cent. of the cases.

(b) Administered in the first stage, 40 per cent.; second stage, 34 per cent.; first and second stages, 26 per cent.

(c) DOSE.—Before dilatation of cervix, never more than $\frac{1}{2}$ c.c. to primiparæ. After dilatation the dose was occasionally 1 c.c. To multiparæ with yielding or fully dilated cervixes, the dose was always 1 c.c. The maximum dose to any case was $3\frac{1}{2}$ c.c. in four doses.

(d) RELATION TO FORCEPS.—Thirty per cent. of all cases to which pituitrin was administered, were delivered with forceps, *i.e.*, it was successful in 70 per cent. of the forceps deliveries; 85 per cent. were in primiparæ; 15 per cent. in multiparæ.

(e) DURATION OF LABOR AFTER ADMINISTRATION OF PITUITRIN.—In multiparæ, when the drug proved efficient, delivery occurred within an average time of one hour and eight minutes; in primiparæ three hours and eighteen minutes, after the last dose. In 70 per cent. of primiparæ who had received from one to four doses (sometimes half-doses, always full doses after the cervix was dilated), the forceps was required to end the labor. This study verifies the experience of others that the first dose very often is the most efficient, and that the value of pituitrin is greater in multiparæ.

(f) ITS VALUE TO FORTIFY THE PAINS OF INDUCED LABOR.—*Primiparæ*, labor induced with the rectal tube.—After the pains had begun the action of pituitrin seldom failed to hasten the onset of active labor. *Multiparæ*, at term, after castor oil (℥ii) and manual dilatation and gentle separation of the lower pole of the sac.—The dilatation was kept up intermittently for ten to thirty minutes, until pains were thereby regularly brought on. Pituitrin assisted by dilatation, promptly brings on labor and often speedily ends labor within an average of three or four hours, following a single dose. A repeated dose, after an hour or two, will then rapidly end the labor.

Relation to Lacerations.—Labor in multiparæ, the final stage being conducted under ether and with counter pressure upon the head to resist precipitate delivery through the vulvar ring, has not been followed by a greater proportion of lacerations than is usual without pituitrin. In primiparæ, having avoided full doses, the increased number of lacerations that are said to occur were not observed.

Hemorrhage.—Four cases of free bleeding were noted: one of alarming hemorrhage required packings, and in one case of Cesarean section its use without the association of ergot caused collapse from hemorrhage, requiring intravenous transfusion of salt solution.

Ergot should always be used to reinforce the action of pituitrin to prevent and control hemorrhage.

Asphyxia.—In none of the cases was gross asphyxia noted. None of the infants perished. There was no material mortality.

From these experiences the following pituitrin aphorisms are drawn:

1. Never use pituitrin without exhausting your abilities in obstetric diagnosis.
 2. Healthy multiparæ with relaxed birth canals offer the widest and safest fields for its use.
 3. For inertia in the early stage of labor, the sleep of morphia, chloral, or scopolamin is preferred; in the advanced stages of labor, pituitrin often will wisely keep your forceps innocuous.
 4. Ether hilarity and a quick pituitrin labor in multiparæ is a good practical substitute for "twilight sleep."
 5. The uterus, after pituitrin's tumultuous visitation, usually needs the steadying hand of ergot.
 6. Half-doses are more often to be employed than full doses.
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