

63 (880)

The occurrence of casts in the urine following magnesium sulphate ether anesthesia (Meltzer).

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The report relates to the occurrence of casts in the urine following operation under magnesium sulphate-ether anesthesia, in a series of five cases observed by Drs. Meltzer and Peck at the Roosevelt Hospital.

Three cases showed hyaline casts in the urine which disappeared after 48 hours and did not reappear. One of the three showed a faint trace of albumin; the other two, no albumin.

Two cases showed hyaline and granular casts and a trace of albumin, one persisting for six days, one for two days or more, being normal on the fifth day.

None of the cases showed any later evidence of kidney irritation. In all of the cases magnesium could be demonstrated in the urine for several days. In none of the cases were casts present in the urine before operation.

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The experimental production of an early stage of extrauterine pregnancy

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In former experiments I had shown that it is apparently impossible to produce experimentally an extrauterine pregnancy in the guinea pig.¹ Neither ligation of the fallopian tubes at the juncture with the uterus, nor incision into the tubes or wall of the uterus at various periods of the sexual cycle led to the development of an extrauterine pregnancy. In another series of experi-

¹Leo Loeb and John W. Hunter, *University of Pennsylvania Med. Bulletin*, Dec., 1908.

ments I had shown that in the guinea pig only the mucosa of the uterus is able to produce a decidua under the influence of experimentally applied stimuli. In the human organism where extrauterine pregnancy occurs, decidua can to some extent form also at certain places outside of the uterine mucosa. It is, therefore, probable that one of the factors upon which the development of an extrauterine pregnancy depends is the capability of the tissue, into which the ovum penetrates, to develop decidual tissue which presents to the ovum an adequate soil for development.

In an experiment carried out recently I was able to show that it is possible to produce experimentally the first stages of an extrauterine pregnancy in the guinea pig, that however the development of embryo and placenta outside the uterus ends prematurely.

Incisions were made into the uterus of a guinea pig two days, sixteen hours after copulation. The incision reached upwards through the greater part of both horns. Eighteen days after copulation, examination of ovary and uterus showed that a new ovulation had taken place approximately three days previously, fifteen days after the preceding copulation. On the peritoneal side of the left horn of the uterus, near the fallopian tube was embedded superficially in the tissue a young embryo in which structures appear which resemble the neural canal, coelomic and enteric cavities and the anlage of the blood vessels. These structures are somewhat distorted. They are surrounded by placental formations, namely, syncytia, plasmodia and small cuboidal cells. The giant cells penetrate into the surrounding tissue of the uterine peritoneal coat and ensheath especially the blood vessels, substituting their wall; the small cuboidal cells supply the lining of cavities, into the interior of which they send papillary processes. Frequent mitoses are present in the cuboidal cells; occasionally a mitosis can also be seen in a giant cell. The plasmodia surround externally these coats of cuboidal cells. Some hemorrhages surround the whole structure and a little connective tissue of the peritoneal coat of the uterus covers it. Decidual tissue is entirely absent. There is no reaction on the part of the surrounding host connective tissue or of the blood vessels. We have without doubt to deal with an ovum which escaped from the upper end of the

uterine cavity through the incision made in the uterus two days, sixteen hours after copulation. The ovum migrated around the peritoneal covering of the uterus and embedded itself superficially in the connective tissue of the peritoneum. Here it developed and is still developing at the times of examination, as the existing mitoses indicated. It produced certain placental structures which joined the surrounding connective tissue and blood vessels. It is not very probable that an ovum leaving the ovary at the time of the last ovulation three days ago could within so short a period of time produce these structures after the passage through the tubes. In this case we would have to deal with parthenogenetic development of the ovum. It is very much more probable that we have to deal with the extrauterine fixation and development of an ovum leaving the uterine cavity through the incision made a few days after the previous ovulation, the cut in the upper part of the uterine horn having been made exactly at the time when the ovum was approaching the uterus after its passage through the fallopian tube. In this case we would have to deal with a very slow and very much delayed development of the embryo, due to the unfavorable conditions under which the ovum develops.

These findings are of importance: first, because they confirm our previous findings, that connective tissue other than that of the uterine mucosa is unable to produce decidua in the guinea pig. While it is under these unfavorable conditions possible for an ovum to undergo the early stages of development, lack of the proper response on the part of the host tissue (lack of decidual reaction) renders the development of the later stages of extrauterine embryonal development impossible.

2. In contact with the connective tissue and vessels of the host the ovum develops mainly certain parts of the fetal placenta, namely syncytia and plasmodia and layers of small cuboidal cells. These structures correspond to certain parts of the normal placenta of the guinea pig which lie in the periphery of the embryo and enter under ordinary conditions into relations with the maternal part of the placenta. Certain parts of the trophoblast and the embryo proper develop only in a rudimentary manner under these conditions.

3. The embryonic and placental structures developing outside

of the uterine cavity resemble in every respect closely the structures which I found¹ in about ten per cent. of the ovaries of young guinea pigs and which I interpreted as ova developing parthenogenetically in the ovaries.

Previously some investigators as well as myself had described the first irregular cleavages in the ova in atretic follicles of certain young guinea pigs. My later observations made very probable the development of the ova to the stage in which the anlage of the nervous system and parts of the fetal placenta are formed. In this case also young guinea pigs are more favorable to the development of the ova.

Our new observation confirms the correctness of our interpretation of the structures found in the ovaries and we can, therefore, state with certainty that in a considerable number of the ovaries of young guinea pigs a relatively far-going parthenogenetic development of the ova takes place.

¹ *Arch. f. Mikrosk. Anat.*, Bd. 65, 1905; *Journal Am. Med. Assn.*, May 6, 1911; *Zeitschrift f. Krebsforschung*, Bd. 11, 1912.