of both coccoid and bacillary forms of rickettsiae in the lesions of lung, spleen, testis, and brain, where they were both intracellular and extracellular in position (Fig. 5). Macrophages in the first three sites were the chief elements parasitized; while, in the brain, neuroglial cells contained the organisms. In the kidneys smaller numbers were found within tubular epithelium, lying free in the lumen, and also within cells of the intertubular connective tissues.

(Professor A. W. Downie, Liverpool University, has kindly examined sections from the lung, and agrees that the numerous small bodies in the exudate have the morphological and staining characteristics of rickettsiae.)

Discussion

Q fever is rarely fatal. There seem to have been only six other recorded cases—two in Australia (Queensland Ann. Rpt Hlth and Med. Services, 1936–7 and 1938–9) and four in America (Lillie *et al.*, 1941; Irons and Hooper, 1947; Brown *et al.*, 1948). In two of these (Irons and Hooper) necropsy was not made. In all but one case (Queensland Ann. Rpt Hlth and Med. Services, 1936–7) death was due to a diffuse pneumonia of lobar or greater extent with histological features (Lillie *et al.*, 1941; Perrin, 1949) similar to those described here. In its gross appearance the consolidated lung simulates pneumococcal lobar pneumonia, but histologically is quite unlike it, and in its mononuclear exudate and other features resembles psittacosis and other virus pneumonias (Binford and Hauser, 1944). In the two cases in which histological examination was made rickettsiae could not be found.

Changes in the nervous system have not previously been observed in Q fever, nor is there any description of testicular lesions, though both Irons and Hooper (1947) and Gsell (1948), in clinical accounts, report the occurrence of orchitis, and Wegmann (1949) describes the development of symptoms of encephalitis in a patient recovering from Q fever pneumonia.

Splenic enlargement of the "toxic" type described here has been present in other cases.

Summary

A description is given of the pathological changes in the first fatal case of Q fever reported in this country. The patient, a man of 78, died of pneumonia after an acute febrile illness lasting 11 days. All who took part in the necropsy became infected, probably by inhalation.

Numerous rickettsiae were found in the pneumonic exudate, which was predominantly of mononuclear cell type, in lesions of brain, testis, and spleen, and also in the kidneys. This is the first recorded occasion on which they have been demonstrated in human tissues.

I am very grateful to Dr. R. A. Willis for advice, to Dr. A. C. Christie, who performed the necropsy, to Mr. C. G. Chadwin for his expert histological technique, and to Mr. L. A. Cowles for the photomicrographs.

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PLACENTAL METASTASES IN MALIGNANT DISEASE COMPLICATED BY PREGNANCY WITH A REPORT OF TWO CASES

BY

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[WITH SPECIAL PLATE]

According to Willis (1934), "metastasis of maternal tumours to the products of gestation is very rare, the placenta is affected less rarely than the foetus, and foetal metastases probably always arise from placental deposits." This is borne out by the seven previously recorded cases which are summarized in Table I.

TABLE I

Author	Primary Growth	Placental Metastases	Foetal Metastases
Friedreich (1866) ..	Carcinoma of liver	Unknown	Present
Berghinz (1900) ..	Lymphosarcoma	"	"
Walz (1906) ..	Myxosarcoma of thigh	Present	Unknown
Markus (1910) ..	Malignant melanoma of ovary	"	Absent
Senge (1912) ..	Carcinoma of stomach	"	"
Weber <i>et al.</i> (1930) }	Malignant melanoma of thigh	"	Present
Holland (1949) }		"	"
Gray <i>et al.</i> (1939) ..	Carcinoma of adrenal cortex	"	Absent

On the question of how often maternal malignant disease which has metastasized elsewhere has failed to involve the products of gestation very little has been written, although Katsurada (1902) reported a case of malignant melanoma with widespread dissemination in a woman who died at term but in whose uterus and products of gestation no metastases were found. It is particularly surprising that no case has been reported of carcinoma cervicis with pregnancy in which the growth has involved the placenta by direct, vascular, or lymphatic spread. It might be because careful and thorough examination of the products has rarely been carried out in cases of maternal malignant disease. Thus Hinselmann (1925), in his critical review of the cases of Walz, Markus, Senge, and Friedreich, remarked with regard to the last-mentioned that the placenta, although macroscopically normal, "was not properly dissected out because at the time of delivery the importance of the case was not realized." The baby was subsequently found to have a metastatic growth in the left knee. Weber *et al.* (1930) were the first to record a case in which the neoplasia was demonstrated in all three—mother, placenta, and baby. This case has been discussed in further detail by Holland (1949).

During the past year six cases of maternal malignant disease in association with pregnancy have been encountered in this unit, and the findings are given in Table II. In the first of these cases the placenta and cord, which were macroscopically normal, were not examined microscopically, but in the remainder serial sections were studied. In addition, where the foetus was aborted or stillborn a post-mortem examination was carried out, with histological study of the organs.

In all cases of maternal malignant disease thorough histological study of the placenta should be a routine investigation. In this way the frequency of placental metastases might be more accurately estimated. Moreover, the prognosis for the mother may be revealed thereby; for if, in

the absence of evidence of secondary growths elsewhere, metastases are found in the placenta, as in Case 4 recorded below, the prognosis for the mother is obviously very poor.

The purpose of the present communication is to record the fourth and sixth of our cases, which are thus the eighth and ninth in which metastases of a maternal tumour have been found in the products of conception, and the fourth and fifth in which secondary deposits have been demonstrated in the placenta.

Case 4

A married woman was seen first at our unit on February 2, 1949, her last menstrual period having been in mid-July, 1948. She was referred by Mr. John McFarland, who in September, 1948, had carried out radiotherapy and excision for a carcinoma of the left ethmoid. She was then 28 weeks pregnant. Her

plasm, and the patient was not fit for radiological examination of the gastro-intestinal tract.

Her condition continued to deteriorate and she suffered intense pain in the hepatic region. Five days after admission premature labour began spontaneously and she was delivered of a living male child weighing 2 lb. 15 oz. (1.3 kg.) Eight hours later the mother died. At necropsy a carcinomatous ulcer was found on the greater curvature of the stomach, together with two enlarged regional lymph nodes. The liver, which weighed 9½ lb. (4.3 kg.), was studded with secondaries but no metastases were found elsewhere.

The baby, which was adjudged to be of 30 weeks' maturity, was in poor condition at birth and died 36 hours later. At necropsy there were bilateral atelectasis of the lungs and blood clots in the lateral ventricles of the brain. No metastases were present in any organ.

TABLE II

Case No.	Age	Gravidity	Site of Primary Growth	Method of Termination of Pregnancy	Time of Termination	Placenta	Foetus	Metastases Elsewhere at Time of Termination
1	32	2	Stomach	Induction of labour	37 weeks	Not examined	Alive. Not affected	Peritoneum
2	31	3	Breast	Patient died	20 "	Not affected	Not affected	Widespread
3	38	1	"	Therapeutic abortion	10 "	"	"	Pelvis and femora
4	22	1	Ethmoid	Induction of labour	37 "	Metastases present	Alive. Not affected	None other found
5	32	1	Breast	Died 6 hours after delivery	28 "	Not affected	Stillborn. Not affected	Widespread
6	40	5	Stomach	Died 8 hours after delivery	30 "	Metastases present	Neonatal death. Not affected	Regional glands and liver

general condition was not good, there being a purulent discharge from the operation area; and as the pregnancy proceeded her condition deteriorated. She complained of intense lumbo-sacral backache and of shooting pains in the thighs, but no radiological evidence of secondary deposits in bone was found at any time during the pregnancy. Eventually on April 7, 1949, labour was induced by artificial rupture of the membranes in the interests of the mother, and within 16 hours she was delivered of a baby which weighed 5 lb. 10 oz. (2.5 kg.) and was adjudged to be of 37 weeks' maturity. The baby was last seen at 6 months of age, when she was well and weighed 15 lb. 8 oz. (7 kg.).

The placenta weighed 22 oz. (623 g.) and looked macroscopically normal. There were several small white areas, none more than ½ in. (1.25 cm.) wide, long, or deep. Microscopically, there were many plaques of carcinoma in the intervillous spaces (Plate, Fig. 1), but, unlike the cases of Senge and Holland, no tumour cells were seen within the villi. The carcinomatous deposits consisted of darkly staining spheroidal cells of obvious malignant character that resembled those seen in the sections of the original tumour of the ethmoid (Fig. 2) which had been excised six months previously. The white areas were infarcts which contained both placental and tumour tissue, the former preponderating. No metastases were found in the umbilical cord.

After-history.—The patient was transferred to the Liverpool Eye and Ear Hospital 16 days after delivery. Her condition continued to deteriorate and she died on June 13, 1949, 10 weeks after delivery. Permission for post-mortem examination was not obtained, but at the time of death the liver was enlarged, ascites was present, there was a hard mass in the right iliac fossa, and multiple nodules of secondary growth on the scalp; but there was no evidence of recurrence at the site of the original tumour.

Case 6

A married woman aged 40 was sent into hospital on October 16, 1949, because of slight jaundice and pain in the right subcostal area of three weeks' duration. She had been mildly jaundiced for a week in October, 1948. She had had four normal deliveries, the last in 1945. Her last menstrual period had started on March 29, 1949, and the uterus corresponded in height to a 30-weeks pregnancy.

The liver was enlarged so that its lower border was seven fingerbreadths below the costal margin; it was tender and nodular. There was no clue to the site of any primary neo-

. The placenta weighed 14 oz. (397 g.) and looked normal macroscopically. But on naked-eye inspection of sections stained with haematoxylin and eosin certain areas could be picked out because they stained more deeply. Microscopically these areas were numerous foci of undifferentiated spheroidal cancer cells, some with central necrosis. The tumour cells were confined to the intervillous spaces, and although in some places the malignant cells were in contact with villi there was no definite invasion of them (Fig. 3). Specially stained sections did not show any mucin in the placental metastases.

The primary growth in the stomach was a relatively undifferentiated adenocarcinoma with considerable mucoid degeneration (Fig. 4). The enlarged lymph nodes showed the same histological picture, but the metastases in the liver consisted of completely undifferentiated spheroidal cells which in some areas were invading blood vessels. No metastases were found in the cord.

Summary

The eighth and ninth cases of metastasis of a maternal tumour to the products of gestation are described. Secondary deposits were found in the placenta in both cases, but the umbilical cords and the babies were not affected. Both patients died, one eight hours and the other 10 weeks after delivery.

If metastases are present in the placenta in the absence of demonstrable secondaries elsewhere the prognosis for the mother is poor.

These two cases were encountered within a space of seven months, and therefore a plea is made for the routine histological examination of the products of gestation in all cases of maternal malignant disease complicated by pregnancy.

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H. C. EDWARDS: CARCINOMA OF THE STOMACH

FIG. 1.—(a) Localized cancer of lesser curve in Case 1. ($\times 5$.)
(b) Very early cancer proximal to pylorus in Case 3. ($\times 7$.)

S. BENDER: PLACENTAL METASTASES IN MALIGNANT DISEASE COMPLICATED BY PREGNANCY

FIG. 1.—Case 4. Metastases of carcinoma in placenta. ($\times 100$.)

FIG. 3.—Case 6. Placental metastases. ($\times 100$.)

FIG. 2.—Case 4. Primary carcinoma in ethmoid. ($\times 100$.)

FIG. 4.—Case 6. Primary carcinoma in stomach. ($\times 100$.)

H. KEEN: CRANIAL ARTERITIS PRESENTING AS MENINGITIS

FIG. 1.—Langhans giant cells in media. ($\times 500$.)

FIG. 2.—Cross-section of whole artery. ($\times 120$.)