KRUKENBERG'S TUMOUR ASSOCIATED WITH PREGNANCY

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SUMMARY

The authors illustrate the case of a bilateral Krukenberg's tumour of the ovary in a patient aged 29, a primigravida, at the sixteenth week of pregnancy.

It is a rare event for ovarian cancer to be associated with pregnancy, and Krukenberg's tumour occurring simultaneously with pregnancy is quite exceptional.

Chowdury ([3]) reported only one case of ovarian cancer (adenocarcinoma) out of 52,800 births, and Gustafson ([5]) 2 ovarian cancers among 100,000 pregnancies: of these one was a Krukenberg's tumour secondary to cancer of the stomach. White ([9]), out of more than 35,000 births, encountered only 3 ovarian carcinomas. Beischer ([2]), in 1971, collected from the literature 164 ovarian tumours discovered during pregnancy or in the puerperium between 1947 and 1969, of which 4 were malignant: none of these was a Krukenberg's tumour. Chung and Birnbaum ([4]) have collected from the literature relating to the years 1963 - 1972 about forty cases of ovarian cancer in pregnancy, and have described six cases that they encountered out of about 170,000 pregnancies: none of them was a Krukenberg.

Novak ([7]) in material from a « record of ovarian tumours », found only 2 cases of Krukenberg's tumour during pregnancy out of 2300 neoplasms collected during the thirty years from 1942 to 1972. Of these one was considered primary on the basis of the clinical data and the autopsy report.

Woodruff ([10]), out of 1700 ovarian tumours collected over 17 years, reported 48 cases of Krukenberg's tumour, of which 2 were discovered during pregnancy and immediately operated upon, while one, which was unrecognized, involved the death of the patient on the first day of the puerperium.

We illustrate a case of bilateral Krukenberg's tumour, recently observed at our clinic at Ferrara. This tumour was the only malignant ovarian neoplasm encountered among about 29,000 births that took place in this department during the past 15 years.

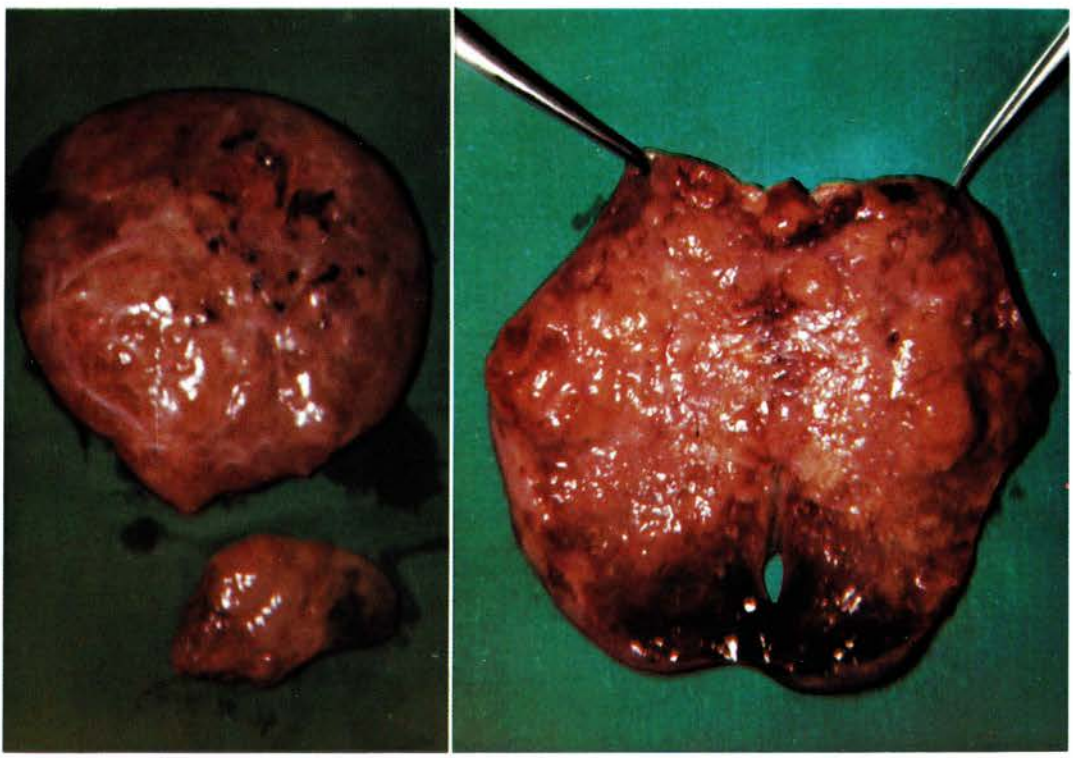

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Fig. 1. — The two ovarian masses: right (above) and left (below).

Fig. 2. — Cut surface of the left ovarian mass: above and to the right, near the margin, can be seen a haemorrhagic corpus luteum.

DESCRIPTION OF CASE

D. M., aged 29, admitted 1-12-1976 (file no. 2012), at 16th week of pregnancy. Last menstruation on 16 August. Family history negative.

Five years ago she had hypertrophic gastritis, radiologically confirmed. Symptoms consisted of dyspepsia and heartburn, which disappeared after medical treatment. Menarche at 14 years. Subsequent menstruation regular in every way. Married 9 months ago. The dyspepsia and heartburn reappeared about 4 months ago.

During her present pregnancy she was seen elsewhere by an obstetrician and « a uterus of greatly increased volume in relation to the duration of the amenorrhaea » was discovered.

The patient asked to be admitted because in addition to the above symptoms she had had severe epigastric pain for about one week, with frequent attacks of vomiting and constipation.

On examination, her general condition seemed markedly deteriorated. Arterial pressure 110/60, pulse 90 per min. Tachypnoea with superficial breathing, reflexes present and normal. Abdomen painful on palpation in all the quadrants; signs of positive flux.

Gynaecological examination. - Portio cervicis diminished in consistency with orifice closed. Body of uterus not easily delimited due to the presence of a large swelling whose upper pole extended into the lower supra-umbilical region; very painful on pressure; a fixed, poorly delimited swelling could be palpated.

The patient was sent for laparotomy with the diagnosis of « swelling in abdomen and pelvis, sub-occlusive syndrome ».

Operative findings. - About 1000 cc of lemon yellow liquid was aspirated from peritoneal cavity. Uterus enlarged 4 times, soft consistency. At the right adnexa was a swelling which thrust upwards as far as the hypochondrium; it had a smooth surface, was reddish-grey in colour and of parenchymatous consistency. At the left adnexa was a mass the size of a large orange, identical in appearance and consistency with the contralateral mass; the mass occupying Douglas' pouch was firmly adherent to the pelvic lining and to the sigmoid colon and rectum. Omentum inspissated, oedematous, friable. Appendix congested, oedematous and increased in volume; small intestine, transverse colon and walls of stomach oedematous; whitish nodules on the transverse vesical fold, of hard consistency, and between a lentil and a cherry-stone in volume. The liver, gall-bladder and spleen were macroscopically normal.

Operation: bilateral adnexectomy, appendectomy, biopsy samples taken from omentum and transverse vesical fold.

Four days after the operation the patient had an abortion, expelling a dead foetus.

Anatomo-pathological report. - The right ovary (15 × 10 × 8 cm) was found on section to consist of soft tissue, reddish-grey in colour, in which whitish nodular formations were found, of variable dimensions. The left ovary was more reduced in size (8 × 4 × 3 cm); on section it presented the same appearance, with a haemorrhagic corpus luteum (figs. 1, 2).

Histological findings. - The appendix (external layers), the omentum and the prevesical tissue were the site of diffuse metastatic carcinomatous infiltration, the lymphatic vessels being permeated with signet-ring cells, positive to PAS and alcian. There was some diffuse neoplastic infiltration in both the ovaries, partly with signet-ring cells intensely positive to PAS and alcian (figs. 3, 4).

Diagnosis: Krukenberg type tumour.

Since it was excluded by the histological findings that the site of the primary tumour could be the appendix, and the data in the history indicated the possibility of an unrecognized gastric neoplasm, a radiograph of the digestive tract was undertaken, which showed organic cuff stenosis of the horizontal segment of the stomach, with slight dilatation of the tract above the lesion. The remainder of the digestive tract showed no suspicious characteristics.

Radiograph of thorax: no metastases in the lungs or supraclavicular region.

The post-operative course was satisfactory, with excellent recovery both subjective and objective, and it was therefore decided to transfer the patient to a surgical department for a gastrectomy operation; but this could not be completed because a massive neoplastic infiltration was discovered on the operating table. The patient died at home on 10-2-1977.

DISCUSSION

The case reported is, on the basis of the histological and histochemical characteristics of the neoplasm, its secondary nature and the localization of the primary lesion, a classic Krukenberg's tumour and corresponds to the diagnostic criteria established by Schlagenhaufer in 1902 ([8]).

As for the primary site of the neoplasm, although anatomopathological data are lacking, there can be no doubt that it originated in the digestive tract, as indicated by the history, the radiological findings and the intra-operative discovery.

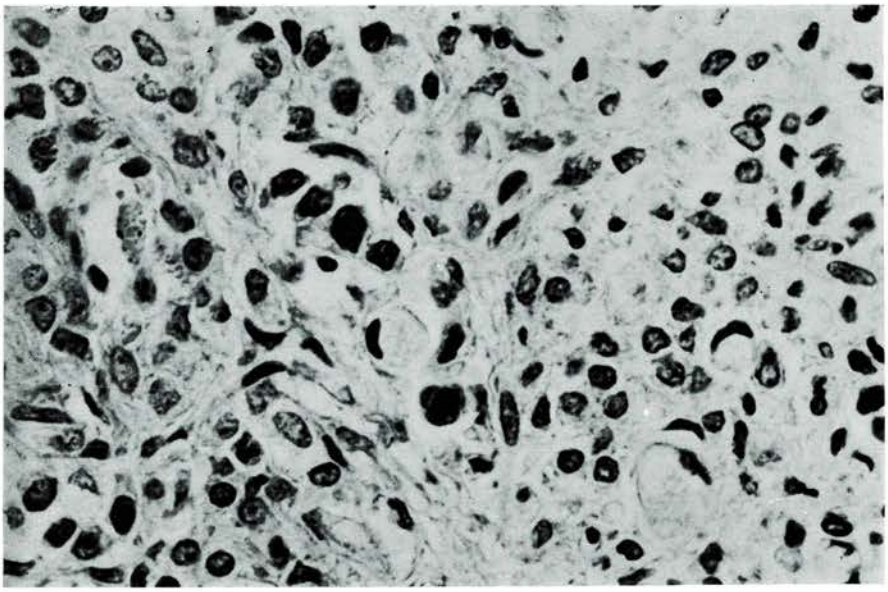

Fig. 3. — Signet-ring cells can be recognized on section. Stain: haematoxylin-eosin (320 ×).

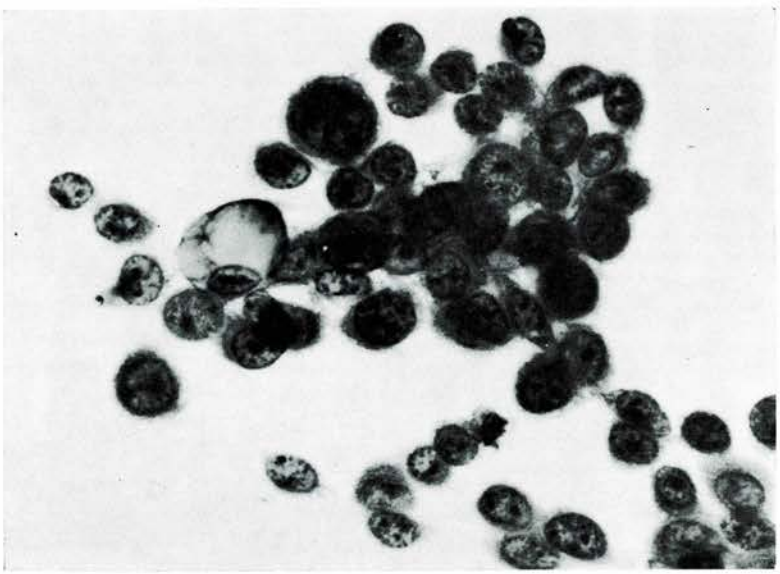

Fig. 4. — Smear produced after apposition of the sectioned surface. Marked anisocytosis and anisokaryosis; the nuclei are surrounded by a thin cytoplasmic halo and contain macronucleoles. A cell with a large cytoplasmic vacuole and eccentric nucleus can be seen. Stained by Papanicolaou's method (320 ×).

It should be noted that the pregnancy started at the same time that the gastric symptoms (which had remained quiet for some time) made their reappearance, probably in relation to the proliferative stimulus of the primary neoplastic process at gastric level, heightened by the state of pregnancy which, as we know, is accompanied by immunological depression. In this connexion it should be remembered that Anderson ([1]), in treating with BCG pregnant patients affected by recurrent herpesvirus hominis, obtained dramatic responses which could be related to the depression of cell immunity that is found in pregnancy. Moreover, the improvement in the general condition of the patient after pregnancy was interrupted is in accordance with Novak's hypothesis ([7]) of an immunological rebound as a consequence of the cessation of the state of pregnancy.

Finally, it should be asked whether the hormonal situation, allied to the state of pregnancy, might not have encouraged the vigorous development of the ovarian metastases relatively to the response of the stromal components, from the moment when one of the characteristics of Krukenberg's tumour is the intense proliferative reaction of the ovarian stroma, sometimes containing so many cells as to resemble a sarcoma ([6]).

As regards the operative procedure, hysterectomy was not felt to be necessary, seeing that the pregnancy, at the time of operation, was still progressing, as witnessed also by the serological tests.

Translated by Samil-Pabyrn Foundation.

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