THE SURFACE ULTRASTRUCTURE OF EXFOLIATED CERVICAL CELLS.
A. E. WILLIAMS, Teaching and Research Centre, Western General Hospital, Edinburgh and J. F. MURPHY, J. M. ALLEN and J. A. JORDAN. Department of Obstetrics and Gynaecology, University of Birmingham.

We have previously (Murphy et al., SEM/IITRI. 1973, p. 605 and Br. J. Cancer, 1973, 28, 86) studied exfoliated cervical cells by scanning electron microscopy (SEM). Recently critical point drying has been introduced and it has become possible to stain cells before SEM study, thus making identification easier.

Cell samples were prepared (1) by scraping from the cervix, staining and processing for SEM study and (2) by removing cells from colposcopically directed areas on the cervix with a membrane filter. A total of 138 patients were studied and characteristic differences were noted between the surface ultrastructure of benign and malignant cells. Dyskariotic cells showed a mixture of surface types between normal and frankly abnormal. Differences were observed in the SEM between cells that appeared identical by light microscopy. In particular, a tendency to surface abnormality existed on cells that were normal by light microscopy when the cells were adjacent to abnormal cells.

MEASUREMENT OF CARCINO-EMBRYONIC ANTIGEN (CEA) IN NORMAL SUBJECTS AND IN VARIOUS NEOPLASTIC AND NON-NEOPLASTIC DISORDERS. P. FRANCHIMONT, P. F. ZANGERLE, M. L. DEBRUCHE, P. CONINX and J. PROYARD. Institut de Medecine, University of Liège, Belgium.

A method of assay of CEA not requiring prior extraction has been described. Various essential criteria for a valid radioimmunoassay have been fulfilled; the use of a preparation of labelled CEA reasonably freed of contaminants and of molecules damaged by the labelling reaction, acquisition of specific antibodies, use of an efficient system of separation of free labelled CEA from that bound to antibody (the double antibody technique) and application of the assay method to biological fluids, in particular, serum. The sensitivity of this method allows the detection of 0.5–1 ng/ml of serum; the precision and the reproducibility of the results are very satisfactory.

CEA could be detected in the serum of only 4.2% of 1017 normal subjects. The sera of 205 patients suffering from a neoplasm formally diagnosed were investigated: CEA was found in the sera of 145, i.e. 70.7%. Among these patients 24 were investigated before any treatment; 21 had detectable CEA concentrations (i.e. 87%). Of 54 patients with metastases 48 (i.e. 89%) had detectable levels of CEA. The levels were especially high when metastases were present: 61% of these patients had values greater than 10 ng/ml. The levels of CEA were also measured in the sera of 43 patients during treatment with cytostatic drugs. In the non-neoplastic gastrointestinal disorders, CEA was found in 29% of the sera and in non-neoplastic lung disorders, 15.3% had detectable CEA levels the values of which were usually lower than 10 ng/ml. The assay for CEA appears to be a useful method in the diagnosis of cancerous diseases and the follow-up of treatments in carcinoma.

CLINICAL EVALUATION OF CEA IN URINE OF PATIENTS WITH BLADDER CARCINOMA. C. B. KORSTEN, J. P. PERSLIN and J. RENAUD. Netherlands Cancer Institute, Amsterdam.

Urine from 73 patients was analysed for CEA (carcinoembryonic antigen) using a radioimmunoassay. The findings in 66 patients are summarized in the Table.

| Previous radio-therapeutic treatment | Incidence of urinary infection |
|-------------------------------------|-------------------------------|
| State of disease                    | Without urinary infection | With urinary infection |
| None                                | 0/11                         | 5/5                        |
| None                                | 8/8                          | 4/4                        |
| Yes                                 | 2/21                         | 3/3                        |
| Yes                                 | 9/10                         | 4/4                        |

In another group of 7 patients without evidence of urinary infection CEA was determined before and after therapy. In 5
patients in whom treatment was successful CEA excretion declined, contrary to the remainder of this group, who showed both progression of the disease and increase of CEA.

It is concluded that CEA estimations are highly valuable for diagnostic and follow-up purposes in patients with bladder carcinoma provided that urinary infections are absent.

**RADIOIMMUNOASSAY OF HCG, α AND β SUBUNITS IN CANCER.** P. FRANCHIMONT and A. REUTER. Institute of Medicine, University of Liège, Belgium.

The specific measurement of β HCG and native HCG is possible. We have prepared a specific antiserum anti-HCG which does not give any cross-reaction either with the other glycoprotein hormones (follicle stimulating hormone, FSH, luteinizing hormone, LH, thyrostimulating hormone, TSH) or with α and β subunits of HCG.

Another method for assaying native HCG is to use a system constituted of labelled β subunit with an anti-β subunit antiserum and pure HCG as standard preparation. For the specific measurement of β HCG subunit, we use a homologous system in which the glycoprotein hormones as well as α and β LH subunits do not interfere. For the measurement of the α subunit we have a less specific system. However, correction is possible knowing the normal interference in the sera of normal healthy subjects and not pregnant subjects.

Using these methods, we have detected HCG, α and β subunits of HCG in pathological ranges in 81%, 100% and 75% in trophoblastic and embryonic tumours (21 cases) respectively. In 78 patients with non-trophoblastic tumours, native HCG α and β subunits HCG were respectively detected in 11%, 11% and 24% of the cases.

**VAGINAL CYTOLOGIC EVALUATION AS A PREDICTIVE TEST ON HORMONE DEPENDENCY AND RESPONSIVENESS TO PROGESTOGENS OF ENDOMETRIAL ADENOCARCINOMA.** P. IDE and J. BONTE. University of Louvain, Belgium.

Progestogens seem to be very useful not only as a complement to combined radio-surgical therapy of localized endometrial adenocarcinoma but also as an exclusive treatment of recurrent or metastatic cancers. Exclusive high dosage medroxyprogesterone treatment brings about a significant remission in almost 50% of the recurrent or metastatic endometrial adenocarcinomata. Vaginal cytological evaluation before and during therapy has a striking prognostic value. In 57% of the patients presenting an oestrogenic vaginal smear (68% of total patient number) before medroxyprogesterone treatment a significant tumour remission is observed. Progestational treatment changing an oestrogenic smear to an intermediate or to an atrophic one, or bringing an intermediate smear to atrophy induces a 92%, even a 100%, significant remission rate. Return of the vaginal smear to an oestrogenic aspect after withdrawing the medroxyprogesterone therapy, or even during this treatment, announces a new progression of the adenocarcinoma.

**CHARACTERIZATION OF IMMUNOCOMPETENCE IN CANCER PATIENTS.** F. DE HALLEUX, C. DECKERS, M. T. SIMON-MEULENBERGS and H. MAISIN. Institut du Cancer, Louvain, Belgium.

Aiming towards a thorough evaluation of the prognosis and the immunological approach of the therapy of cancer patients, nonspecific as well as specific immune reactions have been investigated by in vivo and in vitro tests.

The anamnestic response to PPD (purified protein derivative) tuberculain was investigated by Mantoux tests and leucocyte migration tests. The results show that for 19/38 patients with a positive Mantoux test the average migration inhibition index was 12-43%. The 19 negative patients had an average index of 1-23%. A primary response was investigated by cutaneous sensitization to DNCB (dinitrochlorobenzene). The specific immune reactions were tested by $^{51}$Cr-release lymphocytotoxicity assay against allogeneic tumour cells of the same histological type. The lymphocytotoxicity indices were above 30% for 6/10 melanoma patients and 1/6 breast tumour patients. No healthy individual nor patient with unrelated tumour had an index above 28%. Some correlation between these results and the clinical status of the patients has been observed, however, larger series will be needed for demonstrative evidence.