The effect of oestrogens and progestogens on serum protein levels

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In a previous study the levels of four serum proteins, assayed by a radial immunodiffusion technique, were measured in nine healthy women before and after taking combined oestrogen/progestogen oral contraceptives. Significant increases in α_2 macroglobulin, transferrin, and IgG were found but albumin was unchanged. The purpose of the present experiment was to determine whether the oestrogen or progestogen component was responsible for these changes.

Two groups of 14 healthy females were given either 50 mg oestrogen (mestranol) or 1 mg progestogen (ethynodiol diacetate) daily for three weeks. Protein levels were determined, at weekly intervals, before, during, and after therapy. Significant increases in α_2 macroglobulin and transferrin were found in those subjects taking mestranol. Neither of the two groups showed significant changes in IgG or albumin.

Protein levels in 14 healthy females were measured at three- to four-day intervals over one menstrual cycle. No convincing evidence of cyclical variation due to endogenous production of hormones was found but there was some indication that transferrin perhaps showed cyclical variation.

The pepsins of patients with peptic ulcer

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Agar gel electrophoresis at pH 5.0 of histamine-stimulated normal gastric juice reveals eight proteolytic zones, not all of which are present in every subject (see Table). Zones 1, 2, 3, 3a, and 5 are caused by different individual pepsins, of which 3 and 5 are the principal pepsins. Zones 4 and 6 arise from a pepsin inhibitor complex and from residual zymogen respectively. Zone 7 is not inactivated at alkaline pH and is better called a gastric proteinase than a pepsin.

Pepsin 1 occurs with significantly increased frequency in patients with peptic ulcer (Table). It also occurs in several such patients in greatly increased amounts. Patients with gastric ulcer exhibit these effects to a greater extent than patients with duodenal ulcer.

There is no association of hyperchlorhydria with increasing amounts of pepsin 1; in duodenal ulcer the data suggest the reverse, but are not conclusive. Nor is there any association between the presence of pepsin 1 and the possession of blood group O; in both sorts of ulcer the data again suggest the reverse.

A new aetiological factor in peptic ulcer has thus been revealed, which is operating more frequently in gastric than in duodenal ulceration, and independently of other aetiological factors, such as hyperchlorhydria and the possession of blood group O.

Infection due to *Klebsiella aerogenes* in a neurosurgical unit

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Sixteen of the 75 beds in the West of Scotland neurosurgical unit form an intensive care ward and it was here that infection was most serious. The causal organism was shown biochemically to be *Klebsiella aerogenes* and 114 of 217 isolates from different sources had the same antibiotic sensitivity pattern. However, 33 different patterns were recognized, colistin and gentamicin being the only antibiotics to which all strains were sensitive.

Infection with *K. aerogenes*, first recognized late in 1967, became serious in the summer of 1968 when, in the intensive care ward, one patient in four had a chest infection and one patient in eight a urinary infection due to this organism. During the next 10 months patients with these infections received conventional antibiotic treatment based on the sensitivity tests *in vitro* but less than 10% of them showed any improvement. Twelve patients died from *Klebsiella* infections, eight of them from meningitis.

Infections were then treated with colistin in six times the maximum recommended dose and, although individual patients benefited, *Klebsiella* infection was not

eliminated from the unit. Between 1966 and 1969 there had been a four-fold increase in the amount of ampicillin and cloxacillin prescribed and, in desperation, it was agreed to abandon the use of antibiotics. The dramatic result of this decision was an immediate reduction in the incidence of infections and the disappearance of *K. aerogenes* from the unit. This improvement has been sustained for six months.

Search for *Serratia*

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The search for *Serratia* was stimulated by the fact that since the paper by Black, Pollock, and Batchelor (1967) there have been no further reports in the British literature. There have, however, in the interim, been numerous articles in American journals, a fact alluded to in the leading article in the *British Medical Journal* of December 1969. It was hoped that the search would answer the question whether the organism is more common in the USA or whether it is not being recognized by British bacteriologists.

Serratia was sought during a period of three and a half months in the Glasgow Royal Infirmary. During this time more than 14,000 bacteriology specimens were examined in the laboratory and, for the purposes of the search, every specimen was plated on MacConkey's medium. With the exception of sporing *Proteus* and pigmented *Pseudomonas*, colonies which have no lactose fermentation, or were only weak in lactose fermentation, were retained for study by a variety of biochemical tests. After excluding organisms which occurred more than once in the same patients 134 colonies which were not lactose-fermenting strains were diagnosed. Of these strains, four strains (3%) of *Serratia* were isolated. The number of isolations was very much smaller than in comparable American literature.

The conclusion reached was that the organism is obviously not so common in Great Britain as in America but is probably much commoner than many people realize.

References

Black, W. A., Pollock, A., and Batchelor, E. L. (1967). Fatal transfusion reaction due to *Serratia marcescens*. *J. clin. Path.*, 20, 883-886.
British Medical Journal (1969). *Serratia* septicaemia. *Brit. med. J.*, 4, 756.

	No. of Patients	Pepsin Zones						
		7	6	5	4	3	2	1
Normal subjects	59	19	3	100	58	100	29	47
Patients with gastric ulcer	37	21	3	100	54	97	46	78
Patients with duodenal ulcer	31	0	0	100	48	100	32	68

Table Frequency of occurrence (%)