Discussion

The effect of the natural hormone progesterone on the sebaceous glands is controversial. Early workers noted that progesterone caused an increase in the size of the sebaceous gland in the rat,^{8,9} but others did not confirm this.¹⁰ There are similar conflicting data in man.¹¹⁻¹³

Synthetic progestogens not only have progestogenic effects but also a range of other activities. In rats norgestrel and norethisterone acetate have androgenic actions, while lynoestrenol and ethynodiol diacetate have both androgenic and oestrogenic activity.¹⁴

Large doses of oestrogen suppress sebaceous gland activity and improve acne. Ethinyloestradiol in doses as low as 60 µg day reduces the SER.¹⁵ We have shown that 50 µg ethinyloestradiol together with 1 mg norethisterone acetate (Minovlar) can also reduce SER significantly. This reduction is not seen, however, if the dose of norethisterone acetate is increased to 3 mg (Gynovlar). Clearly the progestogen modifies the effect of the oestrogen.

Administration of oestrogen together with androgen produces more complicated results. Although there is some antagonism, the androgen seems to be a more potent stimulus.¹ Men who were given a relatively large dose of ethinyloestradiol (1 mg day) developed considerable sebaceous gland suppression, but this effect could be completely reversed by the concomitant administration of a very small dose of oral methyltestosterone (5 mg day).¹ Our data suggest that in normal women the androgenic effects of 3 mg norethisterone acetate will negate the suppressive effects of 50 µg ethinyloestradiol.

Oral contraceptives may modify the hormonal status of an individual in several ways. A recent study¹⁶ of patients taking Ovran 50, Eugynon 50, and Gynovlar 21 showed an increase in serum testosterone, a twofold increase in serum dihydrotestosterone, and a decrease in serum oestradiol concentrations. The urinary excretion of unconjugated androgens also increased. The authors suggested that since the patients were not virilised despite increased levels of circulating "tissue-available" androgens, the effect on androgen-responsive tissues must have been blocked. Our data would support this idea, as the SER did not increase significantly in patients taking Gynovlar and those taking Ovran 50 had a low normal rate.

We have been unable to show any significant increase in SER in patients taking the more progestogenic pills such as Eugynon 30, and the exacerbations of acne reported in these patients may

be due to other factors. Premenstrual exacerbations of acne in women not taking the pill are thought to be a progestational effect unrelated to sebaceous gland activity.¹⁷ The diameter of the pilosebaceous orifice is at its smallest between the 16th and 20th day of the cycle.¹⁸ There is an increased resistance to sebum outflow, and it is this that may lead to an exacerbation of acne a few days later. Patients taking the combined pill have a progestational effect throughout the cycle. If the sebaceous gland is not suppressed by the oestrogen present in the pill then a progestogen-induced change in duct diameter may be responsible for exacerbations of acne.

We conclude that acne-prone subjects requiring an oral contraceptive should, if possible, be given a pill, such as Minovlar, in which the oestrogenic effect is predominant.

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SHORT REPORTS

Effect of amniocentesis on fetal breathing movements

The measurement of fetal breathing movements (FBM) in high-risk pregnancies holds promise as an index of fetal well being.^{1,2} Before FBM can be used clinically it is essential to understand the factors affecting this phenomenon. In a current study FBM are recorded serially in high-risk pregnancies, and in many of these patients amniocentesis is performed to estimate pulmonary maturity. We have reviewed our data to determine the effect, if any, of amniocentesis on the incidence of FBM.

Method and results

FBM were observed using a linear array real time B-scan instrument (ADR, Model 2130) with a 3.5 MHz transducer. Observations were made with the patient in a semirecumbent position between 0900 and 1500. Patients were discouraged from smoking for at least one hour before the examination. Mineral oil was applied to the abdomen, and the transducer adjusted so that a longitudinal scan of the fetus was obtained. The fetus

was then observed for a minimum of 30 minutes. FBM were defined as convergent thoracic wall movements in conjunction with abdominal excursion. Apnoea was defined as the absence of FBM for six seconds or longer. The periods of FBM were measured by stopwatch and the incidence of FBM (%FB) calculated as the percentage of observation time that FBM were present.

Daily observations of FBM were made before and after amniocentesis in 24 patients with high-risk pregnancies. The gestational age at the time of amniocentesis ranged from 31 to 41 weeks. A clear specimen of amniotic fluid was obtained from all patients after a single attempt. The volume of amniotic fluid did not exceed 20 ml. There were no instances of suspected fetal trauma, and the patients received no additional medication before or after the procedure. A retrospective review of these data was made to determine the effect, if any, of amniocentesis on FBM.

The mean incidence of FBM ranged from 59.5% to 66±11% for the three consecutive days before amniocentesis (see figure). Those differences were not significant. In 20 of 24 patients (83.3%) there was a fall in the incidence of FBM one day after amniocentesis, in three (13%) no change, and in one (4.1%) an increase. The mean incidence of FBM was significantly lower on the first (19.5±SE of mean 5%; P<0.001) and second days (24±8%; P<0.05) after amniocentesis. The incidence of FBM observed on the third and fourth days after amniocentesis were not significantly different from the value observed immediately before the procedure.

In three patients FBM were observed for 30 minutes before, during, and for 30 minutes immediately after amniocentesis. No change in the incidence

Incidence of FBM (mean $\pm$ SE of mean) before and after amniocentesis in 24 patients with high-risk pregnancies in third trimester. Numbers in parentheses are numbers of observations of FBM made. A significant fall in incidence of FBM is observed at days 1 and 2 after amniocentesis.

or pattern of FBM was observed. All showed a fall in the incidence of FBM 24 hours later. In one patient two amniocenteses were performed, separated by a five-day interval. A fall in the incidence of FBM was observed after each amniocentesis.

Comment

A significant fall in the incidence of FBM was observed for up to two days after amniocentesis. The explanation for this phenomenon is speculative. The incidence of FBM falls within 24 hours of spontaneous parturition in sheep and man³ and during labour in the monkey⁴ and in man.³ An increase in uterine activity is commonly observed after amniocentesis.⁵ Thus, possibly an increase in uterine activity after amniocentesis may be related to the fall in FBM. The mechanism by which such an effect is mediated is unknown. A prospective study of this association is being carried out.

Analyses of breathing movements in the animal and human fetus appear to offer insight into the fetal condition.^{1,2} Our data suggest that observations of FBM made within 48 hours after amniocentesis should be interpreted with caution.

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Reprints should be obtained from FAM.

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Subclavian artery thrombosis with contralateral hemiplegia

The concept of retrograde embolus from an arterial thrombus is unusual. The suggestion that such an event might occur at the junction of the right subclavian and right common carotid arteries was first made in 1927¹ in a report on two patients with vascular insufficiency in the right arm associated with left hemiplegia. Subsequent reports of such cases are scanty^{2,3} and mostly predate modern angiographic and surgical techniques. Nevertheless, Shucksmith⁴ has described a young woman with this syndrome in whom the diagnosis of right subclavian artery thrombosis extending back to the junction with the right internal carotid artery was made angiographically and confirmed by surgery. We describe a similar case.

Case report

A 34-year-old woman was admitted to hospital semiconscious. She was six weeks postpartum from her fourth pregnancy, which had been complicated by mild pre-eclampsia, and had restarted Eugynon (norgestrel and ethinyloestradiol) one week earlier after an interval of two years. She smoked 35 cigarettes daily. Her mother had diabetes. She had had coldness, paraesthesiae, and blueness of the right hand for one week and intermittent pain in the right shoulder area for 12 years. On the day of admission she had retired to bed with a severe headache and was later found confused and unable to use her left arm or leg. She was drowsy and unresponsive, with left-sided weakness and left-sided extensor plantar response; as her conscious level improved over the next few days left sensory inattention became apparent. There was a bruit over the right subclavian artery, the right radial pulse was obviously diminished, and the right hand was cold.

Plasma electrophoresis showed type IV hyperlipidaemia (cholesterol 4.7 mmol/l (181 mg/100 ml), triglycerides 3.2 mmol/l (283 mg/100 ml)). The results of haematological and biochemical tests, including serum glucose, were otherwise normal. Findings on cerebral angiography suggested infarction in the right parietal region: there was late filling of arteries in this area, with slight outward displacement of surrounding vessels. Arch aortography demonstrated a thrombus in the right subclavian artery apparently extending back into the innominate artery at its junction with the right internal carotid. She was given heparin but within three days developed a further episode of left-sided weakness, succeeded shortly by complete occlusion of the blood supply to the right forearm and hand, so that emergency surgery was undertaken by Mr Edgar Parry. At operation a large thrombus was removed from the root of the right subclavian artery. The scalenus anterior muscle was bulky, and a fibrous band behind it, partially compressing the subclavian artery, was divided. Further distal clots were removed with a Fogarty's catheter. Full power returned quickly to the left side, and the arterial supply to the right arm has remained patent. Nevertheless, for many months she was greatly disabled by spatial disorientation making dressing and simple household tasks difficult; she was forgetful; and she was conscious of considerable intellectual impairment. When reviewed 21 months later her symptoms had greatly improved, though three episodes of grand mal convulsions have necessitated treatment with anticonvulsants.

Comment

There seems little doubt that the two episodes of left-sided stroke in this patient resulted from emboli originating at the proximal end of the subclavian thrombus and passing up the right internal carotid artery, the tendency to form the original thrombus perhaps resulting from a combination of the described physiological and anatomical predisposing factors. Such a syndrome would not be expected to occur on the opposite side in view of the different anatomical configuration of the vessels arising from the aortic arch.

The few patients described in published work have all had vascular symptoms in the right arm before their strokes, and awareness of the syndrome combined with available techniques of investigation should lead to prompt surgery.

Requests for reprints should be addressed to Dr Macaulay.

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