Methods and results

To have a basis for comparison, we measured urea, creatinine, and α -fetoprotein (α -FP) concentrations in maternal urine and amniotic fluid collected from 30 patients undergoing second trimester amniocentesis. Urine samples were midstream specimens collected before the patients underwent transabdominal amniocentesis. After centrifuging both samples at 1000 rpm, we estimated the urea creatinine, and α -FP concentrations.

The different concentration of each substance in amniotic fluid and maternal urine is clearly illustrated in the table.

Urea, creatinine, and α -fetoprotein concentrations in amniotic fluid and maternal urine (means and ranges)

Test	Amniotic fluid	Maternal urine
Urea (mmol/l)	1.83 (0.83-3.49)	47.1 (19.9-106.2)
Creatinine (μ mol/l)	71 (53-97)	3801 (1060-13 437)
α -fetoprotein (mg/l)	18.6 (4.0-34.0)	0.005 (<0.005-0.026)

Conversion: SI to traditional units—Urea: 1 mmol/l $\approx$ 6 mg/100 ml. Creatinine: 1 μ mol/l $\approx$ 0.0113 mg/100 ml.

Discussion

Since, irrespective of the reason for amniocentesis, all amniotic fluid is routinely tested for α -FP, an abnormally low level of this protein leads to suspicion that the specimen is in fact urine. Urea and creatinine concentrations are then estimated for confirmation and when necessary the patient recalled for another amniocentesis.

In our series of over 500 second trimester amniocentesis seven specimens of urine were inadvertently collected. A low α -FP concentration (<0.100 mg/l in each sample) led to further testing. Urea and creatinine concentrations were, respectively, >16.6 mmol/l (100 mg/100 ml) and >530 μ mol/l (6.0 mg/ml), which fell within the maternal urine range (see table). Two fetuses out of the seven had neural tube defects. One had an open meningomyelocele and one was an anencephalic.

Hence in view of the short time interval between diagnosis and any subsequent termination of pregnancy it is imperative to ascertain rapidly the nature of fluid along the lines we have suggested.

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Reservoir of group B streptococci in women in labour

Streptococci of Lancefield's Group B (*Streptococcus agalactiae*) are a major pathogen in perinatal infections.^{1,2} This study aimed at establishing whether a routine screening of women in labour for this organism would help in making an early diagnosis leading to successful treatment of the disease in the neonate.

Methods and results

High vaginal and rectal swabs were taken from 125 women in labour in the maternity unit at Hammersmith Hospital just before artificial rupture of membranes. The vaginal swabs were plated on blood agar plates with and without 25 mg/l neomycin. The vaginal and rectal swabs were then cultured by a modification of the technique of Baker *et al*³ involving initial enrichment in selective nutrient broth containing nalidixic acid, 10 mg/l; gentamicin, 4 mg/l; and 4% defibrinated horse blood. The enrichment cultures were incubated at 37°C aerobically overnight, after which they were subcultured on Columbia blood agar (Oxoid CM 331) plates with and without nalidixic acid, 15 mg/l; gentamicin, 4.5 mg/l; and polymyxin B 50 000 units/l. All the plates were incubated anaerobically overnight using the "Gas Pak" system. Any orange or brown colonies showing small hazy zones of beta-haemolysis were presumed to be group B streptococci after

Proportion of 125 women in labour from whom group B streptococci were isolated from either vagina and rectum, or both

Type of specimen	Proportion positive for group B streptococci	
	No	%
High vaginal swabs only	9	7.2
Rectal swabs only	5	4.0
Both high vaginal and rectal swabs	9	7.2
Total	23	18.4

staining by Gram's method. Confirmation was by Lancefield's grouping using the autoclave antigen extraction method. Only rectal swabs which grew faecal flora on MacConkey agar were included in the survey, to avoid isolates of group B streptococci from the perineal skin, which could have originated from either vagina or rectum.

The isolation rates of group B streptococci from the vagina and the rectum are shown in the table. Overall, group B streptococci were present in the rectum in 11.2% of the women sampled and in the vagina in 14.4%. Taken together, 18.4% of the women had group B streptococci at either or both sites. The organism was found in the vagina in 8.8% of the women before enrichment culture and no isolates were detected before enrichment which could not be found by the selective enrichment technique. During the study a full-term newborn baby died of group B streptococcal pneumonia with septicemia. This was despite treatment with penicillin and gentamicin after the early diagnosis of the infection, but only after the baby was already clinically ill. The diagnosis of group B streptococcal septicemia in this child was expedited by the results of the mother's screening cultures which indicated presence of beta-haemolytic streptococci in the mother's vagina seven hours after the baby's birth and one day before the streptococcus was isolated from the baby's blood cultures.

Discussion

The results indicate that group B streptococci are present in the faeces and vagina of women in labour; this poses a problem to obstetricians who may wish to give prophylactic antibiotics to pregnant women harbouring these organisms in order to avoid infection of the neonate. There are no controlled studies showing that administration of antibiotics to such pregnant women will prevent neonatal infection or will eradicate the carrier state for the duration of pregnancy. Moreover, antibiotic prophylaxis of colonised neonates does not always eradicate the streptococcus and may not prevent recolonisation.⁴ While in most women it is possible temporarily to eradicate the organism from the vagina with parenteral penicillin,⁵ it is unlikely that such treatment will eradicate the organism from the faeces because penicillinase-producing coliforms in the faeces will destroy penicillin. Whether dangerous colonisation of the baby during labour can be prevented by giving the mother penicillin during labour is not clear and may require controlled study of over 10 000 deliveries for any statistical evidence to emerge. Knowledge that the mother had been a group B streptococcal carrier did not help the paediatricians in successfully treating the baby here described once it became ill immediately after birth. In view of the low attack rate of colonised babies (about 1%),¹ routine chemoprophylaxis is not recommended. Nevertheless, early treatment of at risk babies after taking appropriate specimens for culture is probably the best method of management at present.

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