tion between total pethidine dose and norpethidine concentration was found. In renal impairment norpethidine elimination is prolonged, leading to a greater accumulation.[5]

Despite mounting evidence against pethidine as a first line analgesic in sickle cell crisis its use persists. We find that patients seem to prefer intramuscular pethidine despite its short duration of action and poor analgesia. This preference was also stated by patients' representatives (Sickle and Thalassaemia Association of Counsellors, Cardiff, September 1991). Apparent ease of administration and doctors' familiarity with the drug further perpetuates this legacy. Pethidine should not be used in patients who have a history of seizure after pethidine or renal impairment.[2,3] Daily doses exceeding 25 mg/kg are likely to produce excitatory effects due to norpethidine toxicity.

1 Mitchell A, Fisher AP, Brunner M, Ware RG, Hanna M. Pethidine for painful crisis in sickle cell disease. *BMJ* 1991;**303**:249.
2 Kaiko RF, Foley KM, Grabinski PY, Heidrich G, Rogers AG, Inturrisi CE, *et al*. Central nervous system excitatory effects of meperidine in cancer patients. *Ann Neurol* 1983;**13**:180-5.
3 Tang R, Shimomura SK, Rotblatt M. Meperidine-induced seizures in sickle cell patients. *Hospital Formulary* 1980;**15**:764-72.
4 Reynolds F, Beckett AH. The determination of bupivacaine, lignocaine and mepivacaine in human blood. *Br J Pharmacol* 1968;**20**:704-6.
5 Szeto HH, Inturrisi CE, Houde R, Saal S, Cheigh J, Reidenberg MM. Accumulation of normeperidine, an active metabolite of meperidine, in patients with renal failure or cancer. *Ann Intern Med* 1977;**86**:738-41.

(Accepted 10 March 1992)

Prevalence of potential pathogens in cervical canal before termination of pregnancy

Mike Cohn, Peter Stewart

Department of Obstetrics and Gynaecology, Northern General Hospital, Sheffield S5 7AU
Mike Cohn, *research registrar*
Peter Stewart, *consultant*

Correspondence to:
Dr M Cohn, Department of Obstetrics and Gynaecology, Leicester Royal Infirmary, Leicester LE1 5WW.

BMJ 1992;**304**:1479

Pelvic infection is a complication of termination of pregnancy.[1] The risk is increased if *Chlamydia trachomatis* or other potential pathogens are present in the cervical canal before the abortion.[2] We report the prevalences of five potential pathogens in the cervical canal of women requesting terminations in Sheffield.

Patients, methods, and results

We performed a retrospective analysis on the microbiological results of endocervical swabs taken from 1784 consecutive women requesting termination of pregnancy at this hospital. *Neisseria gonorrhoeae* was isolated from three women, *C trachomatis* from 155, *Mycoplasma hominis* from 315, *Ureaplasma urealyticum* from 340, and *Trichomonas vaginalis* from 30. One or more of these micro-organisms were isolated in 652 women.

For the analysis, if either *N gonorrhoeae* or *C trachomatis* was isolated the patient was deemed to be at a "high risk" of developing pelvic infection after termination whereas those harbouring *M hominis*, *U urealyticum*, or *T vaginalis* were thought to be at "moderate risk." As marital status, age, and parity are likely to be related to risk a multivariate approach was taken. A cumulative logic model[3] was fitted to the data with the SAS statistical package with the dependent variable as infection (none, moderate risk, high risk) and the explanatory variables as marital status (single, married, divorced, or separated), age ($\leq$24, 25-29, 30-34, $\geq$35), and parity (primigravid, nulliparous other than primigravid, multiparous).

The model of best fit included all three of the explanatory variables; the fit became significantly poorer (at the 5% level) when any of these variables was dropped from the model. The final model showed that the chance of being at high risk of pelvic infection was increased for single women (adjusting for age and parity), those aged under 25 (adjusting for marital status and parity), and multiparous women (adjusting for marital status and age).

Sensitivity and efficiency† of selective testing for endocervical micro-organisms before termination of pregnancy*

Patient characteristic	No (%) women tested	High risk infections		All infections	
		Sensitivity (%)	Efficiency (%)	Sensitivity (%)	Efficiency (%)
All women	100·0	100·0	1·00	100·0	1·00
Single	71·1	82·8	1·16	78·8	1·11
Multiparous	43·3	39·2	0·90	40·1	0·92
Aged <25 years	66·2	77·7	1·17	72·1	1·09
Single, multiparous	16·9	21·6	1·28	20·5	1·21
Single, aged <25 years	59·7	72·6	1·22	67·3	1·12

*Sensitivity=No detected/No infected×100. †Efficiency=sensitivity/percentage of patients tested.

Comment

This large study showed that potential pathogens are found in the endocervical canal of an appreciable proportion of women requesting termination of pregnancy in Sheffield, thereby supporting the findings of other small studies in the United Kingdom.[4] It also confirmed that such micro-organisms are more frequently isolated from young single women.

If *C trachomatis* was present in the cervical canal before termination there was a 20-25% risk of the woman developing postabortion pelvic infection.[2] This would have caused the woman discomfort and distress and might have required a further admission to hospital. A few of these women would experience long term subfertility and pelvic pain.[5] Screening every patient requesting a termination would add about £8.00 to the cost of each abortion. However, the cost of treating women with established postabortion infection and of the long term sequelae should be set against this. Furthermore, by identifying infected women their partners can be tested and if necessary treated, thereby reducing the chances of the woman being reinfected and the pool of infected subjects within the population.

As cervical infections are more common in certain groups it would be possible to introduce selective screening to reduce the costs. The table illustrates the sensitivity and efficiency of different policies. If all single women under the age of 25 were tested only 60% of the population would be screened but 73% of infected subjects would be detected. Furthermore, most patients for whom subsequent fertility is most important would be screened.

We recommend that all patients requesting termination of pregnancy are screened for potential endocervical pathogens and that when these are detected appropriate antibiotics are prescribed at the time of the abortion. If resources are limited a selective policy could be introduced.

We thank Carol Jaeger for statistical advice.

1 Frank PI, Kay CR, Wingrave SV, Lewis TL, Osborne J, Newell C. Induced abortions and their early sequelae. *J R Coll Gen Pract* 1985;**35**:175-80.
2 Qvigstad E, Skaug K, Jerve F, Fylling P, Ulstrup JC. Pelvic inflammatory disease associated with Chlamydia trachomatis infection after therapeutic abortion. A prospective study. *British Journal of Venereal Diseases* 1983;**59**:189-92.
3 Agresti A. *Categorical data analysis*. Chichester: Wiley, 1990:332-6.
4 Ridgway GL, Mumtaz G, Stephens RA, Oriel JD. Therapeutic abortion and chlamydial infection. *BMJ* 1983;**286**:1478-9.
5 Heisterberg L. Pelvic inflammatory disease following induced first-trimester abortion. *Dan Med Bull* 1988;**35**:64-75.

(Accepted 10 March 1992)