Prevalence of morbidity associated with abortion before and after legalisation in South Africa

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Abortion on request has been legal in South Africa since 1997. The Choice in Termination of Pregnancy Act of South Africa 1996 allows abortion on request up to 20 weeks' gestation. Since it was introduced, 40 000 legal abortions have been performed annually.[1] A national study in 1994 on morbidity associated with incomplete abortion (illegally induced and spontaneous miscarriage) assisted the act's passage through parliament.[2]

We studied the impact of legislative change on morbidity and medical management by repeating the 1994 study of morbidity due to incomplete abortion among patients presenting to public hospitals in 2000.[3]

Participants, methods, and results

Over different three week periods between May and August, we collected data on all women presenting to selected public hospitals with incomplete abortions under 22 weeks' gestation. We excluded legally induced and threatened abortions. The sampling frame included all public hospitals in the nine provinces of South Africa responsible for treating women with gynaecological problems in 2000. The sample was stratified randomly by province and category of hospital (district, regional, and tertiary). In each stratum, two hospitals were selected with the sampling probability proportional to size (number of beds). Our sample consisted of 47 hospitals, as five of the provinces had one or no hospital in the tertiary stratum. A data capture sheet for each woman was completed from the hospital records by healthcare staff.

We used three clinical severity categories for data analysis and interpretation.[4] Calculations were based on population estimates for 1999 of 13 478 000 women aged 12-49 years and 1 106 000 live births, where appropriate. The analysis took into account the complex sample design, which was a stratified multistage sample and was not self weighting. We used the Rao Scott F test (part of the Stata package) to compare the categorical variables with the 1994 study.[2 5]

The methods of the two studies differed in the sampling of the hospitals. In 1994 the sample was stratified only by the number of beds: all hospitals with over 499 beds and a random sample of hospitals with under 500 beds were sampled.

All 47 sampled hospitals responded, returning a total of 761 data capture sheets. In 1994, 803 data capture sheets were returned. Three hospitals had no cases of abortion during the study period. The incidence of incomplete abortion per 100 000 women aged 12-49 years was 362 (range 282-441) compared with 375 (299-451) in 1994 (difference 13 (95% confidence interval −123 to 97) per 100 000). The rate of incomplete abortion per 100 000 live births was 44 (34-54) compared with 42 (33-50) in 1994 (difference 2 (−11 to 15) per 100). There was one death in the 2000 study period compared with three in the 1994 study.

The table shows the characteristics of the women, clinical findings on admission, and changes in hospital management. In 2000, only 7.8% of transfusions were given to women with haemoglobin concentrations of over 86 g/l. Antibiotics were not given to 55.5% and

Characteristics of women, clinical findings on admission relating to abortion, and changes in hospital management, South Africa, 1994 (n=308) and 2000 (n=761). Values are percentages.

	1994	2000	Test statistic	P value
Mean age; SD (years)	27.8; 7.2	27.0; 7.6	t=1.23	0.2
Median parity; range	1; 0-8	1; 0-11	—	—
Trimester status:				
12 weeks and under	60.5	67.1	$F_{1,72}$=0.87	0.4
Over 12 weeks	39.5	32.9	—	—
Signs of infection on admission (list is not exclusive):				
None	79.5	90.1	$F_{1,72}$=7.30	0.009
Offensive discharge	13.5	6.4	$F_{1,72}$=6.71	0.01
Tender uterus	8.4	3.7	$F_{1,72}$=3.05	0.09
Localised peritonitis	1.7	0.7	$F_{1,72}$=1.43	0.2
Generalised peritonitis	0.1	0.1	$F_{1,72}$=0.03	0.9
Septicaemic shock	0.3	0.2	$F_{1,72}$=0.18	0.7
Signs of organ failure on admission:				
None	95.6	97.1	$F_{1,72}$=0.49	0.5
Disseminated intravascular coagulation	0.4	0.2	$F_{1,72}$=0.45	0.5
Respiratory distress	0.1	0.2	$F_{1,72}$=0.36	0.6
Hypovolaemic shock	1.6	2.5	$F_{1,72}$=0.39	0.5
Renal failure	1.8	0.1	$F_{1,72}$=0.05	0.8
Other	—	0.2	—	—
Findings on evacuation:				
Offensive products	12.6	9.4	$F_{1,72}$=1.15	0.3
Mechanical or chemical injury to genitals	3.2	0.6	$F_{1,72}$=9.67	0.003
Foreign body	1.3	0	$F_{1,72}$=4.36	0.04
Evidence of misoprostol tablets	—	0.4	—	—
Severity categories:				
Low (no signs of infection)	66.2	72.4	$F_{1.98,142.23}$=2.15	0.1
Medium (temperature 37.3-37.9°C and/or tender uterus, offensive discharge, or localised peritonitis on admission)	17.3	17.9	—	—
High (temperature over 37.9°C, pulse rate over 119 beats/min, any sign of interference, organ failure, peritonitis, or death)	16.5	9.7	—	—
Antibiotics given	43.6	33.5	$F_{1,72}$=1.51	0.2
Blood or blood products given	13.4	8.3	$F_{1,72}$=2.28	0.1
Evacuation:	88.9	87.8	$F_{1,72}$=0.05	0.8
Sharp curettage	97.5	82.0	$F_{2.22,157.27}$=4.59	0.01
Suction	—	2.5	—	—
Manual vacuum aspiration	1.5	14.8	—	—
Other or not specified	1.0	0.7	—	—
Analgesia or anaesthesia given:				
None	4.5	7.8	$F_{2.16,153.33}$=1.06	0.4
Local	1.1	3.9	—	—
General	70.1	54.2	—	—
Sedation	23.7	33.8	—	—
Other	0.6	0.2	—	—

52.0% of women in the medium and high severity categories, respectively.

Comments

Legalisation of abortion in South Africa immediately decreased morbidity but the magnitude was not substantial, possibly because morbidity was already lower than in many countries. The lack of change may reflect additional covert induced abortion activity, perhaps through the use of misoprostol in unregistered settings. There has been a trend towards lower technology. While more manual vacuum aspiration and less general anaesthetic and blood transfusion is commendable, antibiotic use and pain relief seem inadequate. The trend towards lower technology partially reflects success of training programmes for induced abortion; however, our findings suggest that further structured training in the use of manual vacuum aspiration with paracervical block and appropriate use of antibiotics and misoprostol would be beneficial.

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Drug points

Metabolic decompensation in pump users due to lispro insulin precipitation

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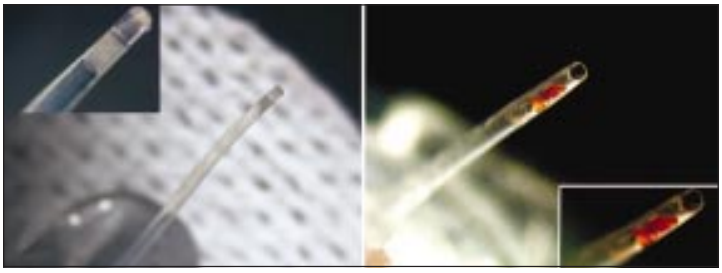
Small, short term studies show that lispro insulin (Humalog; Eli Lilly & Co, Indianapolis, IN), commonly used in pump therapy, is stable in insulin pumps.[1] However, in agreement with reports by others,[2] we have noted several patients who have developed erratic and unpredictable glucose fluctuations with lispro insulin that have resolved when the treatment was changed to buffered regular insulin (Velosulin; Novo Nordisk, Princeton, NJ) and aspart insulin (Novolog; Novo Nordisk, Princeton, NJ). We have confirmed insulin precipitation in the infusion catheters used by two patients.

Case 1

A 42 year old woman who had type 1 diabetes mellitus for 31 years had excellent glycaemic control (haemoglobin A_{1c} 6.1%) using buffered regular insulin in her Minimed 507C pump (Medtronic Minimed, Northridge, CA). Forty hours after changing to lispro insulin she awoke from sleep with nausea; her fingerstick blood glucose concentration was 21.4 mmol/l and ketone bodies were present in her urine. Troubleshooting revealed that her Silouette infusion catheter was blocked (figure). Radioimmunoassay confirmed that the precipitate occluding the catheter was insulin. Her treatment was changed back to buffered regular insulin and no recurrences of catheter occlusion occurred. She subsequently changed to aspart insulin and, to date, after five months has had no catheter blockages.

Case 2

A 31 year old woman who had type 1 diabetes mellitus for 12 years (haemoglobin A_{1c} 6.5%) was using a Disetronic H-Tron V-100 pump (Disetronic Medical Systems, Minneapolis, MN). After her treatment was changed from buffered regular insulin to lispro insulin, her glucose concentration sometimes fluctuated unexpectedly. These episodes resolved when the infusion catheter was removed. The outer wall of the Sof-Set catheter that had been removed after one of these episodes showed a white precipitate, and staining with dithizone (diphenylthiocarbozone) confirmed that the precipitate was insulin (figure).



Lispro insulin precipitate in infusion catheters for Case 1 (left) and Case 2 (right). Case 2 shows insulin precipitate stained with dithizone (diphenylthiocarbozone)

Patients who use lispro insulin in their pumps and who have unpredictable glucose fluctuations should be advised to consider changing to buffered regular insulin or aspart insulin. The two cases described above indicate that instability of lispro insulin is not specific to a particular infusion catheter or type of pump.

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