SHORT REPORTS

Accuracy of measurements of crown-rump length and biparietal diameter made by inexperienced operators using a real-time scanner

Ultrasonic measurements of crown-rump length and biparietal diameter in the first two trimesters of pregnancy give an accurate gestational age.^{1,2} Measurements obtained with real-time scanners and conventional compound B-scanners correlate well,⁴⁻⁵ as do measurements obtained by operators with differing experience using a real-time scanner.³ I carried out a study to compare measurements made by staff with and without scanning experience.

Apparatus, methods, and results

A Toshiba linear-array real-time scanner was used. The transducer frequency was 4.5 MHz with 64 elements producing 61 lines of echoes. Adjustable callipers could be moved independently over the screen by a "joystick." There was a built-in freeze-frame.

The operators were 11 residents (inexperienced) and three registrars and one senior registrar (experienced). None of the registrars had had formal training in scanning. To establish the reliability of the experienced operators' measurements the case notes of 134 patients who had been scanned before 30 weeks' gestation were studied after delivery. The cases were consecutive over two separate periods. The actual date of delivery was compared with the date of delivery estimated on the basis of the last menstrual period and the first scan. Eighty-four patients had been sure of their dates: 71 (85%) had delivered within ± 14 days of the date estimated from the scan and 60 (72%) within ± 14 days of the date based on the menstrual period. Fifty patients had been uncertain of their dates: 40 (80%) had delivered within ± 14 days of the date estimated from the scan. Patients who had had twins, in whom labour had been induced, or who had delivered an infant weighing under 2500 g were excluded.

The residents were taught how to measure crown-rump length and biparietal diameter by a registrar. After about six weeks they made measurements on their own. Crown-rump length was measured by defining the longitudinal axis of the fetus, moving the callipers to either end, and taking several measurements to ensure that the longest length was obtained. The operator chose the measurements that he considered to be the best. Biparietal diameter was measured by moving the transducer parallel to the falx cerebri until its echo was obtained in the midline. The callipers were placed on the outer aspect of the anterior parietal bone and the inner aspect of the posterior parietal bone, and an automatic digital readout on the screen gave the measurement. None of the patients was specially prepared for the scan.

Differences in measurements made by residents and registrars. (Figures are numbers of patients)

Difference in measurements (mm)	Crown-rump length	Biparietal diameter
0-5	28	58
6-10	7	3
11-15	4	
>15	2	

Measurements were made at the booking clinic. Patients were not selected. The operator booking the patient was aware of her dates and made the first measurement. Residents were as likely to make the first scan as registrars. The second operator, unaware of the patient's dates and the initial scan result, performed a second scan immediately after the first.

Altogether 106 patients were scanned and 108 pairs of measurements made (one patient had twins, and in another both crown-rump length and biparietal diameter were measured). One hundred and two pairs of measurements (41 crown-rump length and 61 biparietal diameter) were available for comparison, measurements in six cases being unsuitable. Crown-rump length measured from 19 to 81 mm and biparietal diameter from 25 to 93 mm.

Student's paired *t* test showed no significant difference between the measurements made by the residents and registrars ($p > 0.5$; table). Residents' measurements of crown-rump length tended to be slightly smaller; this was marginally significant ($t = 1.96$) but was not significant when one value was removed ($t = 1.65$). Eighty-five per cent of all the readings, when converted to gestational age, agreed to within eight days.

Comment

Reliable measurements with a real-time scanner are quick and easy to make. Such scanners will probably become available for routine clinical use in many more obstetric units. These results suggest that clinicians with little scanning experience should be able to obtain reliable estimates of gestational age.

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Anaphylactic reaction to low-molecular-weight porcine factor VIII concentrates

The management of bleeding in patients with inhibitors to factor VIIIIC remains an unsolved clinical problem despite considerable advances in understanding of the molecular biology of factor VIII. Porcine and bovine factor VIII concentrates have been used in the past, especially with severe bleeding problems associated with high antibody levels.¹ Anaphylactic and allergic reactions and thrombocytopenia, however, have greatly limited their usefulness.²

A new highly purified preparation of porcine factor VIIIIC, the low-molecular-weight component,³ has recently become available (Hyate:C, Speywood Laboratories). Mayne *et al*⁴ proposed that this product might be valuable in treating patients with haemophilia who had developed antibodies to factor VIIIIC. We report a severe anaphylactic reaction after the use of Hyate:C in a non-haemophiliac with an acquired inhibitor to factor VIIIIC, which suggests that some caution should be shown in its use.

Case report

A 71-year-old man suddenly developed spontaneous bruising and a massive ileopsoas haematoma with femoral nerve palsy. This haemostatic defect was due to an acquired inhibitor to factor VIIIIC, present at a concentration of 13 U/ml,⁵ resulting in a plasma factor VIIIIC concentration of only 0.01 U/ml. Initial treatment with human factor VIII concentrates was unsuccessful. With the inhibitor titre rising to over 50 U/ml and no evidence of clinical improvement, treatment with porcine Hyate:C was started. He was given 2000 IU Hyate:C after an intramuscular injection of 10 mg chlorpheniramine maleate. Though there were no immediate ill effects, after 75 minutes he developed a severe anaphylactic reaction, with distinct bronchospasm, widespread pulmonary crepitations, peripheral vasoconstriction, and rapid atrial fibrillation. Immediate administration of adrenaline, hydrocortisone, and further chlorpheniramine maleate produced a slow improvement, and over the next 24 hours these symptoms gradually subsided.

Further treatment with porcine concentrates was totally unjustifiable; this was regrettable, particularly in view of the excellent laboratory response obtained with the plasma concentration of factor VIIIIC rising to 0.4 U/ml one hour after the infusion. Furthermore, the platelet count did not fall despite the severity of the reaction and no antibodies to porcine factor VIIIIC were detectable after treatment.

Comment

Use of porcine factor VIII concentrates has previously been severely restricted because of allergic reactions and thrombocytopenia.³ Hyate:C is a highly purified preparation of porcine factor VIII that contains only trace amounts of non-factor VIII protein, thus reducing side effects.³ Unfortunately, the severe reaction after its use in our patient suggests that, as with other porcine products, allergic reactions that might limit its usefulness may occur. A small test dose should therefore be administered before infusion of therapeutic doses to identify more clearly patients who might be at risk of developing such problems.

We thank Dr P A M Bailey, consultant haematologist, and Dr J A Cameron, consultant physician, of Dumfries and Galloway Royal Infirmary, who referred this patient to our department.

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Prostaglandins in gel for mid-trimester abortion: a method to minimise nursing involvement

Prostaglandin administered by intermittent¹ or continuous² administration into the extra-amniotic space induces abortion. Sometimes, however, administration is delegated to nurses, which has been criticised. Craft *et al*³ showed a dose-response curve for prostaglandin E₂ (PGE₂) in gel with optimal effect when 3.5 mg was used, and advised repeated six-hourly injections rather than intravenous oxytocin if abortion did not occur. We report using this regimen as routine in midtrimester abortion.

Patients, methods, and results

One hundred and ten patients were admitted for termination of pregnancy in the midtrimester. All were informed of the potential risks and consented to the procedure. Ages ranged from 14 to 43 (mean 24); gestational age 12-22 weeks (mean 15.7), and parity 0-5.

A 4% solution of methylhydroxyethyl powder (Tylose MH 300p, Hoechst) was prepared with isotonic saline and autoclaved and PGE₂ 3.5 mg in isotonic saline added aseptically. Without anaesthesia a 12 French gauge suction catheter was inserted about 5 cm through the cervical os, and the 8.75 ml gel injected slowly. The catheter was then flushed through with a further 5 ml sterile Tylose gel and removed. If abortion had not occurred or was not imminent at six hours a further 3.5 mg PGE₂ was given and repeated six-hourly until abortion occurred. All patients underwent surgical evacuation of the uterus soon after abortion, even if the placenta was thought to have been delivered completely. Analgesia was by intramuscular injection of pethidine or papaveretum, and epidural anaesthetic was offered.

All patients aborted. Mean time to abortion was 10.7 hours (range 3.3-26.3), with most patients requiring only one or two insertions of PGE₂ gel (table). There was no relation between maternal age or length of gestation and the number of doses. Mean time to abortion of women having had a previous full-term pregnancy was generally shorter (mean 9.1 ± SEM 1.5 hours; n=19) than for those having their first pregnancy terminated (mean 11.9 ± SEM 1.5 hours; n=55). The difference, however, was not significant. There was also no difference in time to abortion between primigravidae and women having undergone abortion previously.

Relation of maternal age and gestational length to number of doses of PGE₂ gel required for abortion

No of doses PGE ₂ gel	No (%) of patients	Mean ± SEM age (years)	Mean ± SEM gestation (weeks)
1	34 (30.9)	25.4 ± 4.4	15.4 ± 2.1
2	64 (58.2)	23.2 ± 2.9	15.5 ± 1.9
3	9 (8.2)	25.2 ± 8.4	17.6 ± 5.9
4	3 (2.7)	22.7 ± 13.1	16.8 ± 9.7

Eighty-five patients (77%) required one or more doses of pethidine or papaveretum for analgesia. Continuous epidural anaesthesia was used in nine (8%), and 16 (14%) requested no analgesia.

The most common side effects were gastrointestinal, 24 patients (21%) experiencing nausea or vomiting, and two diarrhoea. Some patients experienced very painful uterine contractions within minutes of PGE₂ gel insertion, due to the tip of the catheter being introduced too far into the uterus: when the tip was introduced only 5 cm through the cervix this side effect was rare. There were no major complications: no patient suffered cervical laceration or cervicovaginal fistulae; three were given blood transfusions because of blood loss (maximum 1500 ml); and three prophylactic transfusions before the abortion because of sickle-cell disease. Eight patients (7%) developed a temperature over 38°C, four were given antibiotics for suspected infection, and five prophylactically. Two patients were readmitted two weeks after termination and required antibiotics.

Comment

The greater complication rate of termination in the second trimester means that many methods have been employed to find the safest and most efficient technique and minimise nurses' participation.

Midtrimester abortion by dilatation and evacuation has been advocated,⁴ and minimises discomfort and nursing care. It requires more surgical expertise than instillation of gel through the cervix, however, and may not be acceptable in hospitals with doctors at varying stages of training. There are also no long-term data on future reproduction.

We believe that the method using six-hourly injections of PGE₂ in gel, with withdrawal of the cervical catheter, has several advantages. It is safe and efficient, with the doctor introducing all of the PGE₂ at the time of injection, and requires no administration of abortifacient drugs, either extra-amniotically or intravenously, by nurses. When abortion has been delayed beyond the 20th week signs of fetal activity may occur when extra-amniotic techniques are used. After 20 weeks we reverted to using the intra-amniotic method of urea combined with PGE₂,⁵ accepting a higher incidence of cervical trauma and the rare possibility of a coagulation disorder since this method results in fetal death, thereby minimising unnecessary distress to both patients and nursing attendants.

We have no data on the subsequent obstetric performance of patients who have undergone midtrimester abortion by the method described, and there is a need for prospective studies.

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