Audit of Antenatal Clinic for High-Risk Obstetric Patients; Activity and Outcomes

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Abstract
A specialised clinic for the antenatal care of high-risk patients was established in Cork in January 2004. It is led by 2 specialists in materno-fetal medicine and provides care for patients from a large catchment area. Small clinic numbers, specialised midwives, ready access to medical experts and fetal assessment facilities, facilitate an efficient use of resources. We report on the experience and outcomes of this clinic after the first year in operation. A database was set up to store relevant information on patients who attended the clinic in 2004. 143 patients attended. Risk categories included maternal medical disease (62%); multiple pregnancy (11%); previous poor obstetric history (10%); fetal anomaly (8%). Average gestation; 35.9 weeks, average birth weight; 2598g. Caesarean section rate; 41%. Perinatal mortality rate 67 per 1000 (uncorrected); and 20% neonates required NICU care. This approach to highrisk obstetric care resulted in favourable outcomes. The management strategy applied in Cork may be a suitable prototype for comparable areas throughout Ireland.

Introduction

A pregnancy is defined as â high riskâ when the likelihood of an adverse outcome to the woman and/or her baby is greater than that outcome in the general pregnant population[1]. The majority of pregnancies do not fall in this category and antenatal care can be adequately provided for â low riskâ women by local arrangements between GP/midwife /obstetrician (although there is no consensus as to what constitutes the ideal model). The commonest way in which risk in pregnancy is identified is general risk recognition by the care-provider[2]. A minority of the general pregnant population is deemed high-risk so, in areas without a large maternity unit, these patients will attend routine antenatal clinics. Special requirements for the care of these pregnancies is not often easily accessed in the busy routine setting, with consequent possible delays with results and inconvenience for the patient.

A specialised clinic for the antenatal care of high-risk patients was established in January 2004 at the Erinville Hospital, Cork. This clinic is reserved for high-risk pregnancies and provides increased antenatal care requirements in a â one-stopâ fashion. Clinics take place between an outpatient department and fetal assessment unit. Two consultant specialists in materno-fetal medicine lead the clinic thus ensuring the presence of a second opinion for difficult cases. Two Specialist Registrars, one Senior House Officer, one specialised midwife, one ultrasonographer, and clerical staff also attend the clinic. No other outpatient clinics, which could potentially draw away resources, occur during the high-risk clinic, and ultrasound facilities are also protected during this time. The number of patients per clinic is small giving more time per patient in a non-pressurised environment for doctors. A consultant Haematologist attends the high-risk clinic every second week while joint care with other physicians requires some patients to attend other sites. Support services of Neonatology, social work and chaplaincy attend as required. Cases are discussed weekly at a multidisciplinary meeting after the clinic. Referring doctors are kept informed of management with summaries sent after all first visits, and subsequently as required. We report on the experience and outcomes of this clinic after the first year in operation.

Methods
Medical and IT personnel set up a customised database. This was used to collect relevant information on all patients who attended the high-risk clinic from January 1st to December 31st 2004. Data regarding patient demographics, sources of referral, clinical information, risk factors, antenatal management, delivery data and perinatal outcomes were collected.

Results
One hundred and forty three women attended the high-risk clinic from January 1st to December 31st 2004. The majority (53%) of patients were referred from another clinic (obstetric or medical)and 46% of patients were referred directly by their GP. The rate of patient referrals increased as the year progressed. Most women referred were resident in Cork city, but the catchment area included the counties of Cork, Kerry, Limerick and Waterford. The average number of patients per clinic was 15 and clinic sessions lasted three hours per week. The average number of clinic visits per patient was 12. The average number of ultrasounds performed per patient was eight.

The average maternal age was 30.3 years (range 18-44) compared to the national average maternal age of 30.2 years[3]. 39% of women were nulliparous, 61% were multiparous. More than half of the women (65%) did not take folic acid in the periconceptual period. 20% of women were cigarette-smokers with about one third smoking more than 20 cigarettes per day. The majority (93%) did not drink alcohol since becoming pregnant but of those who did, nearly w were taking more than 10 units per week. No patients were documented to be using illicit drugs. The study population represented all socio-economic backgrounds and included immigrants as well as Irish women.

Table 1 Reasons for Referral to High-Risk Obstetric Clinic

High-Risk Category	***n (%)***
Maternal medical condition	89 (62.2)
Muti-fetal gestation	15 (10.5)
Previous obstetric history	14 (9.8)
Fetal condition	11 (7.6)
Advanced maternal age	5 (3.5)
Prepregnancy counselling	4 (2.8)
Post-natal issue	2 (1.4)
Placenta praevia	2 (1.4)
Cervical lesion	1 (0.7)

The reasons for referral to the high-risk clinic are shown in Table1. In 86% cases involving a maternal medical condition, care was provided jointly by obstetrician and physician. Haematologic conditions, especially coagulation disorders comprised the majority of maternal medical conditions (Table 2) and low molecular weight heparin therapy was used in 17/21 patients with coagulopathies. Serial intravenous immunoglobulin (IVIG) treatment was used for one patient in whom the fetus was at risk of fetal alloimmune thrombocytopenia (FAITP). Of the multiple pregnancies, 11 were monochorionic diamniotic (MCDA) twinpregnancies, three were dichorionic diamniotic (DCDA) twin pregnancies, and one was a monochorionic triamniotic triplet pregnancy. Three pregnancies were affected by twin-twin transfusion syndrome (TTTS).

Table 2 Categories of Maternal Medical Conditions Referred

Condition	***n***
Haematologic	25
Endocrine	15

Neurologic	9
Hypertension	8
Autoimmune disorder	7
Viral exposure	5
History of recurrent pregnancy loss	5
Cardiac anomaly	3
Complex surgical history	2
Respiratory	1
Psychiatric	1

Fetal Outcomes
142 women attended the clinic; 15 women had a multi-fetal pregnancy giving a potential of 158 fetuses. Five pregnancies ended in miscarriage, one had an ectopic pregnancy and 26 attended elsewhere for delivery. Four attended for pre-pregnancy counselling only. Thus, in total there were 122 viable fetuses and data were available for 119 of these.

There were 111 live-births. Of the singleton pregnancies 45% had a spontaneous vaginal delivery, 37% were delivered by Caesarean Section, 10% required instrumental delivery, 2% had a vaginal breech delivery and 6% delivered in another unit. Of the multi-fetal pregnancies 50% had a spontaneous vaginal delivery, and 50% were delivered by Caesarean Section.

Table 3 Perinatal Outcomes Compared with General Obstetric Population

	High-Risk Obstetric Group			***General Obstetric Population***		
	Singleton Pregnancies		***Multi-fetal Pregnancies***	***Singleton Pregnancies***		***Multi-fetal Pregnancies***
Average gestation (weeks)	38.7		33.1	39.5		35.9
Average birth weight (g)	3256		1939	3504		2490
PMR uncorrected (per 1000 livebirths)	44		130	7.9		8.4
Total uncorrected PMR		***67***			***25.1***	

The average gestations at delivery and birth weights are shown in Table 3. 20% (23/111) of neonates required NICU admission. Perinatal deaths occurred in 8/119 of infants in this high-risk group and are shown in Table 4.

Table 4 Perinatal Deaths in the High-Risk Obstetric Group

	Gestation	***Associated Features***
Singleton stillbirth	32 weeks	Placental abruption (maternal factor V Leiden homozygote)
Singleton stillbirth	24 weeks	Maternal thrombocytopenia
Singleton stillbirth	25 weeks	Cystic hygroma
Singleton intrauterine death	25 weeks	Trisomy 13
Intrauterine death of one twin	34 weeks	Twin-twin transfusion syndrome
Intrauterine death of one triplet	28 weeks	Twin-twin transfusion syndrome
Neonatal death twin I	27 weeks	Twin-twin transfusion syndrome
Neonatal death twin II	27 weeks	Twin-twin transfusion syndrome

Discussion
The outcomes for this high-risk group in terms of birth weight and gestation at delivery compare favourably to national figures. However, the perinatal mortality rate (PMR) is significantly higher than the national average. It is difficult to compare the PMR with high-risk groups in other units due to the absence of a control group. Larger maternity units in this country often sub-divide clinics for the risk categories which are amalgamated in the Cork group. Similarly it is difficult to compare the Caesarean section rates without a similarly heterogeneous high-risk group for comparison.

The first year of this dedicated high-risk clinic saw maternal medical conditions as the major reason for referral. This highlights the importance of direct communication channels between obstetricians and hospital physicians; we believe this is achieved in a dedicated high-risk obstetric clinic. The clinic is a ready route of referral for physicians and GPs whose patients become pregnant or are contemplating pregnancy. Similarly, obstetricians caring for the high-risk group will benefit from this increased liaison. It is possible that risk categories proportions will alter in the future as we see a trend towards older maternal age, increased caesarean section rates, increased body mass index, increased immigrant populations, more assisted reproduction, improved survival rates following cancer and childhood diseases.

These bring new challenges to the optimal care of the pregnant patient and the fetus that may be best addressed in dedicated clinics.

The majority of women in the high-risk group were not taking preconceptual folic acid. The study group did not differ significantly from the general pregnant population in terms of demographics and this is a disappointing finding especially in view of recent public health campaigns to highlight the importance of folate supplementation in the prevention of neural tube defects. This finding may lend support to the campaign for folic acid supplementation of food. Approximately one fifth of pregnant women in this group continued to smoke in pregnancy despite counselling regarding the additional harmful effects to the fetus. A smoking cessation programme with support of counsellors may improve this but remains unproven at present. The results of such programmes in other units should become available in the near future.

GPs and other doctors quickly became aware of this service following its introduction with a general increase in new referrals throughout the first year in operation. This trend is likely to continue in parallel with projected population growth in Ireland and an increasing birth rate placing increased demands on maternity services. The catchment area covered a large geographical area but the pregnant women in the study group showed a willingness to travel long distances for specialised care. This is an important observation in view of possible centralisation of medical services, including maternity, in the future.

In general, the experience from this clinic after its first year in operation has been positive for patients and doctors. With financial restraints on national medical budgets we feel that the concerted approach provides increased resources for healthcare delivery in a cost-effective manner. We believe it provides an appropriate management strategy for high-risk obstetric patients from a large catchment area and may serve as a model for care of such patients in other similar geographical areas.

References

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