

Assessment and management of hypertensive disorders in pregnancy by health professionals in the Avon district

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SUMMARY. A questionnaire based survey was carried out in the Avon health districts to investigate the assessment and management of hypertensive disorders in the third trimester of pregnancy by health professionals. A total of 673 responses were analysed from 310 general practitioners, 48 hospital doctors, 214 hospital midwives, 81 community midwives and 120 student midwives. The study revealed a wide variation in the criteria used for the diagnosis of a hypertensive disorder in pregnancy and some outmoded recommendations for management. The importance of continuing education is stressed, in order to ensure that current research and the consensus of expert opinion is being relayed to the personnel involved in antenatal care.

Introduction

THERE is little knowledge about the underlying cause of hypertension in pregnancy and thus the classification and definition of hypertensive disorders in pregnancy remain unresolved in the literature. However, one thing is certain: in the past decade the consensus of expert opinion has changed over the significance of weight gain and oedema in pregnancy and the recommendations for the use of diuretics and salt restriction in the management of pre-eclampsia. The research behind the shift of opinion is clearly documented in the literature¹⁻²¹ but it is not known whether this information has been effectively relayed to the personnel providing antenatal care. In order to address this point, a questionnaire survey was carried out in the Avon health districts of all health workers involved with antenatal care.

Method

A questionnaire was sent out to all health workers in the Avon health districts who were involved with antenatal care; this included hospital doctors, general practitioners and hospital and community midwives. The recipients were asked to complete the questionnaire if they had taken the blood pressure of a pregnant woman in the previous 12 months, or to return it blank if they had not done so. A total of 942 questionnaires were distributed and 743 (79%) were returned; 673 respondents (91%) had recorded the blood pressure of a pregnant woman in the past year. Data from this survey concerning the method which

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respondents used to measure blood pressure has already been published.¹

The participants were asked to comment on: (1) the level of blood pressure with and without the presence of proteinuria which they considered abnormal and on which they would take further action in the third trimester of pregnancy; (2) whether they used oedema in their assessment of whether a pregnant patient has a hypertensive disorder; (3) whether they used maternal weight gain in their assessment of whether a pregnant patient has a hypertensive disorder; (4) what action they would take if there was a high weekly weight gain in pregnancy; (5) what action they would take if there was a low weekly weight gain in pregnancy.

Results

Completed questionnaires were received from 310 general practitioners, 48 hospital doctors, 214 hospital midwives, 81 community midwives and 20 student midwives. The response rate from each of the five groups was greater than 65%; 72% of general practitioners, 88% of hospital doctors, 88% of hospital midwives, 75% of community midwives and 66% of student midwives.

The level of blood pressure at which the respondents would take action tended to be lower in the patient with proteinuria than in the patient without proteinuria; this was regardless of whether the diastolic 4th or 5th phase or systolic blood pressure was considered (Table 1). The modal value of diastolic blood pressure at which further action would be taken was 90 mmHg, regardless of whether proteinuria was present or absent. Almost all of the participants would take action for a blood pressure of 170/100 mmHg, regardless of the presence of proteinuria. However, only 60% of participants would act on a phase 4 diastolic blood pressure of 90 mmHg without proteinuria compared with 86% when proteinuria was present; these figures rose to 82% and 95% respectively for a diastolic pressure of 95 mmHg.

Of the respondents 93% considered oedema a useful indicator and 49% would use ankle oedema in their assessment. However, 70% considered generalized oedema to be more significant.

Seventy two per cent considered maternal weight gain in their assessment of whether the patient has a hypertensive disorder. If there was a high weekly weight gain, 23% of respondents would recommend restricting the patient's salt intake, 41% would recommend dieting and 3% would prescribe a diuretic. If there was a low weekly weight gain 5% would prescribe dietary supplements.

The results were analysed further according to each group of health workers. It was found that hospital obstetricians were the least concerned about oedema, with only 73% using it in their assessment and only 27% considering ankle oedema significant. Of the general practitioners 93% would use oedema in their assessment, 57% considered ankle oedema significant and 55% were concerned about generalized oedema.

The responses to the other questions from the different health care workers are shown in Table 2. The present recommendations for the assessment and management of hypertensive disorders in pregnancy do not use any of the criteria suggested

Table 1. Level of blood pressure which would be considered abnormal and on which further action would be taken.

Patients' blood pressure	Cumulative percentage of respondents who would take action for:	
	Patients with negative proteinuria	Patients with positive proteinuria
<i>Diastolic pressure (mmHg) and phase</i>		
75 4th phase	—	1
5th phase	—	1
80 4th phase	2	8
5th phase	4	16
85 4th phase	8	25
5th phase	16	37
90 4th phase	60	86
5th phase	71	94
95 4th phase	82	95
5th phase	92	99
100 4th phase	98	99
5th phase	99	99
105 4th phase	99	99
5th phase	99	99
110 4th phase	100	100
5th phase	99	99
140 4th phase	100	100
5th phase	100	100
<i>Systolic pressure (mmHg)</i>		
130	9	19
140	50	67
150	82	88
160	96	96
170	99	99
180	100	100

Diastolic pressure, -ve proteinuria: $n = 346$ (4th phase), $n = 261$ (5th phase). Diastolic pressure, +ve proteinuria: $n = 338$ (4th phase), $n = 250$ (5th phase). Systolic pressure, -ve proteinuria: $n = 266$. Systolic pressure, +ve proteinuria: $n = 252$.

on Table 2. It can be seen that a proportion from all groups of health workers use these criteria in their everyday practice.

Discussion

Hypertension in pregnancy is defined as a diastolic blood pressure equal to or greater than 110 mmHg on any one occasion or 90 mmHg on two or more occasions more than four hours apart.² Blood pressure normally falls in pregnancy and reaches its lowest level in the second trimester when the diastolic blood pressure is on average 15 mmHg lower than before pregnancy.³ Blood pressure then normally rises and may reach

the pre-pregnancy level by term. In the first two trimesters, a diastolic blood pressure of 90 mmHg represents three standard deviations above the mean³ and in the third trimester it corresponds to two standard deviations above the mean. A diastolic blood pressure above 85 mmHg has been shown to be related to a significantly increased perinatal mortality rate in the presence of proteinuria but perinatal mortality rate is not increased in the absence of proteinuria until the diastolic pressure reaches 95 mmHg.⁴

A degree of oedema occurs in 80% of all pregnancies and is generally considered to be a favourable sign.⁵ It has no prognostic significance in predicting perinatal outcome even when associated with hypertension and proteinuria⁶ and should not be included in the definition of pre-eclampsia.⁷

It is still widely believed that dietary restriction when there is high weight gain in pregnancy will prevent the onset of pre-eclampsia. It was Hamlin in 1952⁸ who claimed that pre-eclampsia would not develop if there was limitation of weight gain with a low carbohydrate, high protein and vitamin diet in mid-pregnancy. However, Campbell in 1975⁹ showed that calorie restriction from 30 weeks in 51 high weight gain primigravidae did not alter the incidence of pre-eclampsia when compared with controls but that it was associated with a significant reduction in the birthweight of the babies.

Salt restriction is still an important part of the management of hypertension in non-pregnant patients and is widely used for the treatment of pre-eclampsia in some countries,¹⁰ but not in the UK. Salt restriction is hazardous in pregnancy; it may aggravate renal impairment^{11,12} (although Mule advocated continued limitation of sodium intake in patients with toxæmia despite its 'occasional complications'). In a controlled trial comparing salt restriction with taking extra salt in pregnancy Robinson¹³ showed the perinatal mortality in the salt restricted group was increased nearly two-fold and was associated with more 'toxæmia'.

Diuretics are widely prescribed for hypertension in non-pregnant patients and are highly effective as they increase salt and water excretion, reduce circulatory filling pressure and hence blood pressure. In addition they may produce a reduction in total blood volume and plasma volume.¹⁴ In hypertensive disorders in pregnancy, however, the blood volume is already reduced and further reduction may reduce the venous return to the heart and hence cardiac output and blood flow to vital organs.

A number of serious side effects have been associated with thiazide diuretics in pregnancy.¹⁰ In addition Gant¹⁵ showed that thiazide diuretics caused a decreased clearance of maternal plasma dehydroisoandrosterone sulphate and he inferred that placental perfusion was decreased. An overview of 11 randomized trials of diuretics in pregnancy showed no benefit from their use.¹⁶ The only indication for diuretics in pregnancy is left ventricular failure.¹⁷

Table 2. Management of hypertensive disorders of pregnancy according to status of health worker.

Health worker	Percentage of respondents who would:				
	Consider weight gain in assessment	Recommend salt restriction for high weight gain	Recommend dietary restriction for high weight gain	Prescribe diuretic for high weight gain	Prescribe dietary supplements for low weight gain
GP ($n=310$)	81	29	55	5	4
Hospital doctor ($n=48$)	50	2	27	0	2
Hospital midwife ($n=214$)	61	16	25	1	3
Community midwife ($n=81$)	85	31	38	2	16
Total ^a ($n=653$)	72	23	41	3	5

^a Owing to small numbers the 20 student midwives have been omitted from this analysis. n = total number of patients.

The benefit of dietary supplements in pregnancy is an additional controversial area; Viegas¹⁷ showed an increased birthweight in the infants of Asian mothers given dietary protein supplements when there was evidence of nutritional stress (inadequate increase in triceps skinfold); however, Watney¹⁸ found no increase in birthweight when protein and energy supplements were given in the third trimester to Asian and white women who were judged to be nutritionally at risk. Birthweight is only increased by supplementation if the caloric intake has been less than 1500 kcal per day as has been shown in many studies.¹⁹

The principles of management of hypertension in pregnancy are: screening asymptomatic women, and a well timed delivery. Conventionally, initial bed rest has been advocated as the blood pressure is lowered by an increased cardiac output and sodium excretion.¹⁰ However, a small controlled study²⁰ showed no benefit for non-proteinuric hypertension. Mild non-proteinuric hypertension can be managed at home with daily assessment of blood pressure and urinalysis. The criteria for hospital admission vary between consultant units, but a diastolic level over 95–100 mmHg is the usual recommendation. If the diastolic blood pressure rises above 110 mmHg antihypertensive therapy is recommended to protect the mother's cerebral circulation. If proteinuria is present admission to hospital is mandatory and if the patient is symptomatic emergency admission is justified as the condition can rapidly become critical. Bed rest has been shown to be beneficial in a small controlled study of pregnancies with severe proteinuria and hyperuricaemia²¹ but in hospital a decision about delivery will be made depending on the speed the condition is progressing and the gestation of the pregnancy.

Conclusion

This study has shown a wide variation between health professionals in the criteria used for the diagnosis of a hypertensive disorder in the third trimester of pregnancy in the Avon health districts. Importance is still being given to the presence of oedema and weight gain when neither has been shown to be of any prognostic significance in hypertensive disorders of pregnancy. Although fewer respondents advocated the use of diuretics and salt restriction, both of which can be detrimental to the pregnancy, these are still being recommended by some respondents. We acknowledge that it is difficult to change views which are taught at medical school as if they were eternal verities but medical research serves no purpose unless the results are acted upon in clinical practice. The importance of the continuing education of those involved in antenatal care to ensure that current policies are followed cannot be more clearly illustrated.

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