

MEDICAL PRACTICE

Occasional Survey

How obstetricians manage hypertension in pregnancy

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British Medical Journal, 1978, 1, 626-629

Summary and conclusions

One thousand and ninety-three obstetricians answered a questionnaire on the management of pregnant women with pre-existing hypertension and pre-eclampsia. They reported that they frequently used antihypertensive drugs (most often methyldopa and diuretics) in severe essential hypertension but tended to give sedatives in mild cases. Renal impairment was considered more important than raised blood pressure as an indication for terminating pregnancy; but even without a raised blood urea concentration over a quarter of respondents (especially the more senior obstetricians) would have considered it. The more junior obstetricians were more likely to admit the least severely affected patients to hospital. Pre-eclampsia was usually treated with bed rest and sedatives (most frequently diazepam); but the choice of drug varied with the seniority of the respondents, the more senior obstetricians tending to confine themselves to the more familiar drugs.

There was considerable unanimity in the replies, even though most of the treatments and practices have not been validated by controlled trials, and two-thirds of the obstetricians gave the same answers to most of the questions.

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Introduction

Raised arterial pressure in pregnancy, whether due to pre-existing hypertension or to pre-eclampsia, increases the risk that the fetus will grow poorly, die in utero, or be delivered prematurely.^{1 2} If these consequences are due to impaired placental perfusion, treatment with antihypertensive drugs might prevent them. There have, however, been few controlled trials comparing different treatments of either essential hypertension in pregnancy^{3 4} or pre-eclampsia. Nevertheless, if there were unanimity about the efficacy of some treatments based on clinical experience, this might cast doubt on the ethics of controlled trials withholding antihypertensive drugs from some patients. We therefore carried out a questionnaire survey to find out how obstetricians manage women with hypertension and pre-eclampsia.

Method

The questionnaire, a 12-page booklet, was designed on the "multiple-choice" principle: respondents had to indicate which of an exhaustive series of managements they would use in particular cases (a precise case history usually being given). All fellows and members of the Royal College of Obstetricians and Gynaecologists in the UK and Eire received this questionnaire and a reply-paid envelope. A second copy was sent to those who had not replied within three months.

Of the 1951 obstetricians mailed, 1484 replied. Having excluded the 391 responders who had not practised for over a year, we analysed 1093 replies; 701 of these were from consultants and 327 from senior registrars and registrars.

The data were recorded on punch cards and processed by computer. A χ^2 test for trends was used to investigate variations in response with the seniority of the respondent.

Results

ESSENTIAL HYPERTENSION

(1) A woman of 28, in the 16th week of her first pregnancy, has essential hypertension, for which she has been treated for four years with methyl-

dopa and a diuretic. Her blood pressure is now 130/80 mm Hg and she has normal renal function. Would you stop or continue these drugs?

Six hundred and eighty-seven respondents would have continued both drugs, but 147 would have stopped both. Eight hundred and fifty-three would have let the pregnancy continue until 38 or 39 weeks but 53 would have been content for it to go to term. Most of the obstetricians could share the care of such a patient with a physician interested in hypertension.

(2) A woman of 28 is found in the 16th week of her first pregnancy to have consistently raised blood pressure. She has no other complications. Supposing the blood pressure were either 140/95 or 170/110 mm Hg, what would be your immediate management of this patient?

If the patient had a blood pressure of 140/95 mm Hg, 467 obstetricians would have admitted her, but only four would have considered terminating the pregnancy (table I). Four hundred and forty-eight would have insisted on bed rest while 170 would have used diazepam, 135 a barbiturate, and 42 a diuretic; 139 would have used an anti-hypertensive drug, and 589 would have used no drug.

TABLE I—Number (and percentage) of obstetricians choosing certain immediate managements for essential hypertension at 16 weeks in a 28-year-old primigravida

Blood urea (mmol/l):	<1.25		1.25	
	140/95	170/110	140/95	170/110
Blood pressure (mm Hg):				
Admit	467 (42.7)	1051 (96.2)	1037 (94.9)	1071 (98.0)
Consider termination . .	4 (0.4)	301 (27.5)	457 (41.8)	793 (72.6)
Use antihypertensive agents	139 (12.7)	796 (72.8)	350 (32.0)	842 (77.0)

Conversion: SI to traditional units—Blood urea: 1 mmol/l \approx 60.24 mg/100 ml.

When asked about a patient with a blood pressure of 170/110 mm Hg, as many as 1051 obstetricians said that they would admit her, but only 901 would have insisted on bed rest; so evidently some would have admitted her without insisting on bed rest. Now 301 of the responders would have considered terminating the pregnancy, and 796 would have started an antihypertensive drug, only 102 and 72 preferring diazepam or a barbiturate.

(3) How would your management of the previous case differ if the patient had a plasma urea concentration of 1.25 mmol/l (75 mg/100 ml)?

With the additional complication of renal impairment, far more obstetricians would have considered terminating the pregnancy. The numbers were now 1071, 793, and 842 for admission, termination, and use of hypotensive drugs.

(4) A patient with a moderately severe hypertension becomes pregnant while taking antihypertensive drugs. Her physician wishes her to continue them for most of the pregnancy. Which drug, if any, would you be happy for the patient to continue taking until labour, and which would you prefer stopped or changed?

Most obstetricians would have continued diuretics and methyldopa, drugs nearly all of them had used (table II). Reserpine and propranolol would have been continued by less than a quarter; experience of these drugs was more limited. Fewer still reported experience of clonidine, bethanidine, or debrisoquine.

TABLE II—Obstetricians' opinions of certain drugs used for severe hypertension during pregnancy. Values are numbers and percentages

	No problem	Would prefer changed	No experience with drug	No answer
Diuretic	787 (72.0)	221 (20.2)	12 (1.1)	73 (6.7)
Methyldopa	995 (91.0)	71 (6.5)	8 (0.7)	18 (1.7)
Reserpine	295 (22.4)	487 (44.6)	308 (28.2)	53 (4.8)
Propranolol	184 (16.8)	328 (30.0)	529 (48.4)	52 (4.8)
Clonidine	231 (21.1)	132 (12.1)	677 (61.9)	53 (4.8)
Bethanidine	132 (12.1)	149 (13.6)	756 (69.2)	56 (5.1)
Debrisoquine	82 (7.5)	100 (9.1)	860 (78.7)	51 (4.7)

PRE-ECLAMPSIA

(5) A woman of 28, normotensive in earlier pregnancy, presents in the 36th week of her first pregnancy with a blood pressure of 150/90 mm Hg. She has finger oedema but no proteinuria. What would your management be?

Nine hundred and sixty-four of respondents would have admitted the patient to hospital and 942 insisted on bed rest. Four hundred

and fifty-two would have prescribed no sedation, 316 a barbiturate, and 296 diazepam. Only 145 would have started diuretic treatment.

(6) How would your management of the previous case differ if the patient had proteinuria? After 24 hours in hospital her blood pressure is 150/100 mm Hg.

Ninety-nine respondents would have used methyldopa as immediate treatment and 495 a barbiturate; 292 would have given a diuretic and 553 diazepam. Within the next 24 hours 361 would have planned to induce labour and 35 would have done a caesarean section; the remaining 644 would have made no plans for the immediate delivery of the baby.

FULMINATING PRE-ECLAMPSIA

(7) A patient with pre-eclampsia goes into labour in the 38th week of pregnancy and her blood pressure rises rapidly to 170/115 mm Hg. What treatments would you use?

In a case of fulminating pre-eclampsia such as this 901 would have used an anticonvulsant drug, 597 a diuretic and an antihypertensive agent, and 768 epidural anaesthesia.

Finally, we asked the obstetricians which anticonvulsant and anti-hypertensive drugs they used in fulminating pre-eclampsia (table III). Hydrallazine and frusemide were the most popular, being used at least sometimes by 865 and 872, respectively; veratrum alkaloids were used by 379 respondents and clonidine and diazoxide by 200 and 248. (Other drugs, not mentioned in the question, may also have been used.) Of the anticonvulsant drugs, diazepam was used most frequently, only 76 obstetricians reporting that they never used it.

TABLE III—Number (and percentage) of obstetricians using various antihypertensive and anticonvulsant drugs in fulminating pre-eclampsia

	Frequently	Sometimes	Never	No answer
<i>Antihypertensives</i>				
Hydrallazine	560 (51.2)	305 (27.9)	205 (18.8)	23 (2.1)
Veratrum	103 (9.4)	276 (25.3)	654 (59.8)	60 (5.5)
Clonidine	45 (4.1)	155 (14.2)	828 (75.8)	65 (5.9)
Diazoxide	45 (4.1)	203 (18.6)	791 (72.4)	54 (4.9)
Reserpine	15 (1.4)	165 (15.1)	864 (79.0)	49 (4.5)
Anglion blockers	8 (0.7)	89 (8.1)	939 (85.9)	57 (5.2)
Sodium nitroprusside . .	1 (0.1)	7 (0.6)	1018 (93.1)	67 (6.1)
Frusemide	448 (41.0)	424 (38.8)	199 (18.2)	22 (2.0)
<i>Anticonvulsants</i>				
Diazepam	671 (61.4)	322 (29.5)	76 (7.0)	24 (2.2)
Chlormethiazole	286 (26.2)	359 (32.8)	392 (35.9)	56 (5.1)
Barbiturates	205 (18.8)	447 (40.9)	378 (34.6)	63 (5.8)
Tribromethanol	183 (16.7)	459 (42.0)	408 (37.3)	43 (3.9)
Magnesium sulphate . . .	19 (1.7)	166 (15.2)	849 (77.7)	59 (5.4)

Bromethol was still used by as many as used the barbiturates (642 and 652) and the more recently introduced chlormethiazole (642, 652, and 645); but magnesium sulphate—widely used in the United States for fulminating pre-eclampsia—was not used by over three-quarters of the obstetricians, only 19 using it frequently.

VARIATIONS WITH SENIORITY

To estimate their seniority we asked the obstetricians when they obtained the MRCOG diploma. Analysis of trends according to seniority in various aspects of clinical management (table IV) showed little variation in the rates for admission in instances (1)-(3) for they were uniformly high. But for the least severe category (with uncomplicated hypertension and blood pressure of 140/95 mm Hg) there was a small gradient—junior obstetricians being more likely ($P < 0.05$) to admit the patient to hospital. A higher proportion of the more senior obstetricians than of the junior doctors would consider terminating the pregnancy in most of the clinical states described, particularly blood pressure of 170/110 without a raised blood urea concentration.

In all severities of the condition junior doctors were more likely than the senior ones to use antihypertensive agents. The use of some of these drugs showed gradients according to seniority (fig 1). While all seniority groups were equally experienced in using methyldopa and diuretics (virtually everyone used them), the more junior obstetricians had more experience than the senior in the use of propranolol ($P < 0.001$), clonidine ($P < 0.01$), and bethanidine ($P < 0.001$).

In the management of fulminating pre-eclampsia (fig 2) hydrallazine and diazepam were used more frequently by the more junior obstetricians ($P < 0.001$), while the reverse trend was seen for tribromethanol

TABLE IV—Management of hypertension in early pregnancy according to seniority. Values are percentages

Blood urea (mmol/l):	<1.25		≥1.25	
	140/95	170/110	140/95	170/110
Years since MRCOG*				
<i>Admit to hospital</i>				
≤5	184 (45.3)	385 (97.0)	382 (97.2)	390 (99.2)
6-10	164 (46.2)	347 (97.7)	341 (95.5)	354 (99.2)
11-15	77 (39.3)	188 (94.9)	186 (94.9)	194 (98.5)
≥16	44 (34.9)	123 (97.6)	120 (95.2)	125 (99.2)
<i>Consider termination</i>				
≤5	1 (0.2)	92 (23.5)	159 (41.2)	286 (73.7)
6-10	2 (0.6)	93 (26.5)	154 (43.9)	269 (75.1)
11-15	0 (0.0)	68 (34.5)	85 (45.5)	138 (71.9)
≥16	1 (0.8)	47 (37.6)	57 (45.6)	97 (77.0)
<i>Use antihypertensive agents</i>				
≤5	59 (15.0)	318 (80.7)	139 (36.5)	328 (85.9)
6-10	43 (12.0)	272 (76.6)	124 (35.7)	284 (81.6)
11-15	22 (11.4)	126 (66.7)	58 (30.4)	148 (77.5)
≥16	13 (10.7)	75 (60.5)	27 (22.9)	77 (64.7)

*The numbers of obstetricians in the different seniority groups were: ≤5—397; 6-10—362; 11-15—200; ≥16—126 (8 not known).

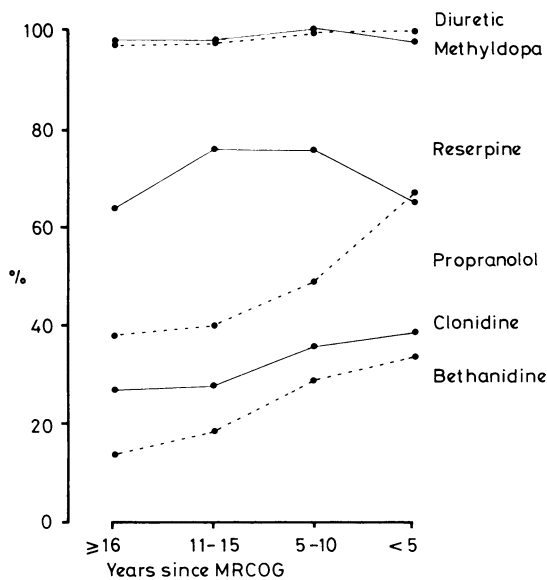


FIG 1—Percentage of obstetricians having experience of particular antihypertensive drugs according to years since MRCOG (see footnote to table IV).

($P < 0.001$). Frusemide was used widely and magnesium sulphate rarely by doctors of all groups. More of the junior obstetricians would use epidural analgesia to control fulminating pre-eclampsia during labour.

Discussion

Before we can claim to have shown how obstetricians manage high blood pressure in pregnancy two potential objections must be considered. Firstly, the 467 obstetricians who did not respond—nearly a quarter of those mailed—may have completely different practices from those who did respond. The non-responding group is probably heterogeneous, including those uninterested in the subject and some perhaps who felt too strongly about it to confine their comments to the limited answers required by this kind of questionnaire. Nevertheless, our replies came from more than two-thirds of all practising obstetricians with a membership or fellowship of the Royal College.

A second, more fundamental, objection is that we have investigated what obstetricians say they do and not what they actually do. This objection is indeed inherent in the method used. But a more direct audit—for example, retrieving prescrip-

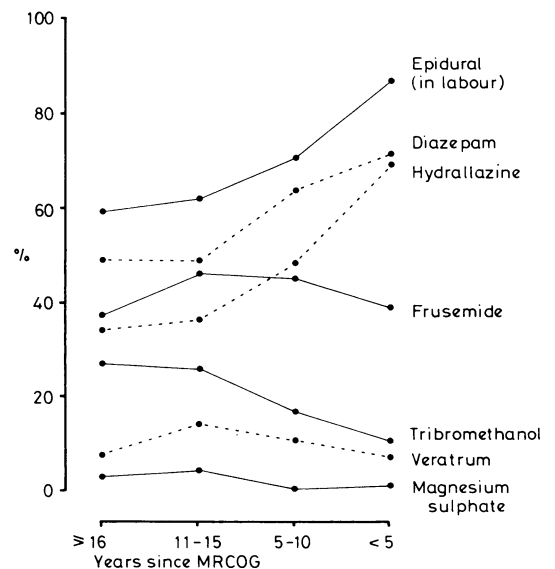


FIG 2—Percentage of obstetricians using certain treatments for fulminating pre-eclampsia according to years since MRCOG (see footnote to table IV).

tion forms—would be much more difficult and subject to other errors.

There was a remarkable consensus of opinion about treatments and management. To most of the questions two-thirds of respondents gave the same answers—surprisingly, since the practices are based on clinical experience rather than the results of randomised controlled trials. This illustrates the principle that regimens do not depend on validation for their popularity,⁵ particularly in acute conditions demanding immediate action; in emergencies doctors tend to use managements that appear to have met with success. The obstetrician is familiar with the variations in response and side effects of older drugs and so is less happy with new ones, particularly those which he has only read about or perhaps used a few times on relatively well people. This may explain why in treating fulminating pre-eclampsia the more senior obstetricians tend to use a more restricted range of drugs than the junior ones.

Responses to the questions on mild hypertension and on the use of well-established antihypertensive drugs showed less variety. Antihypertensive drugs apparently are widely used in women with essential hypertension, but some obstetricians consider them unnecessary and stop them in those who become pregnant. Results of two controlled trials suggest that antihypertensive treatment does confer a marginal benefit on the fetus, though it does not seem to act by preventing pre-eclampsia.^{3,4} Pre-eclampsia itself is largely treated with bed rest and sedatives, of which diazepam is used most frequently.

Obstetricians seem to collaborate with their physician colleagues in managing hypertension in pregnancy; but, disturbingly, almost one-tenth had no physician easily available. Obstetricians should themselves be specialists in the applied pharmacology of hypertension in pregnancy, but a physician can often advise when new agents appear.

The use of antihypertensive drugs seemed to be determined by the level of blood pressure more than by renal impairment; but as an indication for terminating pregnancy renal impairment was the more important, though over a quarter would consider termination even in the absence of a raised urea concentration if the blood pressure were 170/110 mm Hg. This would imply a ban on childbearing for a woman with essential hypertension—a pessimistic attitude that probably reflects the generally poor outcome of such pregnancies.⁶

Although this survey showed a considerable consensus of opinion we do not believe that this precludes the need for prospective randomised controlled trials of particular treatments. Fetal prognosis remains poor and more work is needed.

In theory, controlled trials are justified for any unvalidated practice, no matter how widely it is adopted, and since we have shown that an appreciable minority of obstetricians withhold almost all the treatments discussed there can be no ethical bar to prospective investigations.

We are grateful to the Royal College of Obstetricians and Gynaecologists and to the obstetricians who participated. The study was supported by Merck Sharp and Dohme Ltd.

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References

- ¹ Chamberlain, G, *et al*, *British Births 1970*, Book II. London, Heinemann Medical, 1978, in press.
- ² Page, E W, and Christianson, R, *American Journal of Obstetrics and Gynecology*, 1976, **125**, 740.
- ³ Redman, C W G, *et al*, *Lancet*, 1976, **2**, 753.
- ⁴ Leather, H M, *et al*, *Lancet*, 1968, **2**, 488.
- ⁵ Cochrane, A L, *Effectiveness and Efficiency*. London, Nuffield Provincial Hospitals' Trust, 1972.
- ⁶ Tervila, L, Goeck, C, and Timonen, S, *Acta Obstetrica et Gynecologica Scandinavica*, 1973, **52**, 235.

(Accepted 23 November 1977)

Dynamic Approach to Adolescence

Support of the staff

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British Medical Journal, 1978, **1**, 629-630

From all that has been said it must be clear that attempting any useful treatment with residential psychologically ill adolescents is an extremely complex task. It makes the greatest demands on staff working in the unit. There are the relatively ordinary problems of rivalry between each other, conflicts about authority, individuality, philosophical issues, and the rightness or wrongness of what is done with and to patients, and many other such problems that arise in almost any institutional set-up in varying degrees and arise here most acutely. But the staff's difficulties are complicated by two more specific factors: one is the very complexity of what goes on in the unit and the other is the deep and powerful way in which staff are affected by the pathology of the adolescents.

Like everyone else, staff working in a difficult set-up feel comfortable if the policy of the unit is simple, clear, and well-defined, if they can identify their roles clearly, and think that they are doing something useful that is valued by the patients and by their colleagues, and if they can see for themselves that their own efforts bring quick and obvious beneficial results. These things do not happen in dynamic work in such a setting. Patients do not appreciate the efforts of staff. The staff are often abused and mistreated by the adolescents. The correct approach to the patient's disturbance often leads not to an immediate improvement but rather to an apparent worsening of his behaviour. Sympathy and understanding and sharing of confusions and frustrations by colleagues is not readily forthcoming because of the intra-staff dynamics, and from time to time staff feel frustrated, angry, and hopeless about working in such a place. Specially chosen staff are necessary for this work—people who are emotionally tough, who have a high capacity to tolerate frustration, who have relatively open minds, and who are genuinely interested in the work. It takes an average person about a year of working intensely in the unit to grasp fully the meanings, aims, and complexities of the work.

Clearly, both their normal development and the treatment of their disturbances demand that the young people in the unit are treated as whole individuals. The total approach must therefore be designed to bring out their individuality, which includes their most worrying, frightening, and sickest aspects. Staff on their part must also be able to interact with them as individuals.

In this design, which is calculated to bring out the individuality of all concerned, attention must be given to matters such as the structure and layout of the building at one extreme and to frequent discussions by the staff about their roles and attitudes to the patients and themselves at the other. For instance, dormitories, arranged like army barracks with bedhead ticket numbers for each patient, and staff in uniforms have a dramatic effect in helping the patients lose their identity as individuals and move comfortably into a feeling of simply being a member of a group of unfortunates. They become far more containable, actually feel safer and less anxious, and create less anxiety in staff. But this will diminish the possibility of effective work with their pathology. Likewise various devices and manoeuvres designed to diminish the anxiety of staff and the effect of the patients' projections on to staff, such as splitting up staff/patient relationships, ritual task performances by staff, depersonalisation of both patients and staff, and many more such devices that are used in conventional hospitals to minimise the difficulties and anxieties of the staff, cannot be used in a good residential treatment unit.¹ Any attempt at truly treating the adolescent necessarily means a philosophy in which the adolescent is not suppressed but is rather encouraged to experience and to relate to staff with his total personality—which includes his confusion, his disturbance, his anger, and all his nastiness. The staff absorb the full impact of the patients' disturbances, and they must be given understanding, support, and training to enable them to deal not only with disturbed adolescents but also with their own feelings.

In such an organisation it is essential that anxiety and responsibility are passed upwards so that finally the nursing officer and the director carry the greatest amount of anxiety and responsibility. Authority must be passed downwards so that the lowest paid staff will feel that they are carrying within them the authority of the total staff.

Within an inpatient adolescent unit the results of bad judgment, mismanagement, or serious staff conflicts can have the

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