ABC of Blood Pressure Reduction

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EMERGENCY REDUCTION, HYPERTENSION IN PREGNANCY, AND HYPERTENSION IN THE ELDERLY

Emergency reduction of blood pressure

Indications for parenteral antihypertensive drugs

There are very few indications

Gross left ventricular failure due to hypertension

Encephalopathy with fits or fluctuating neurological signs

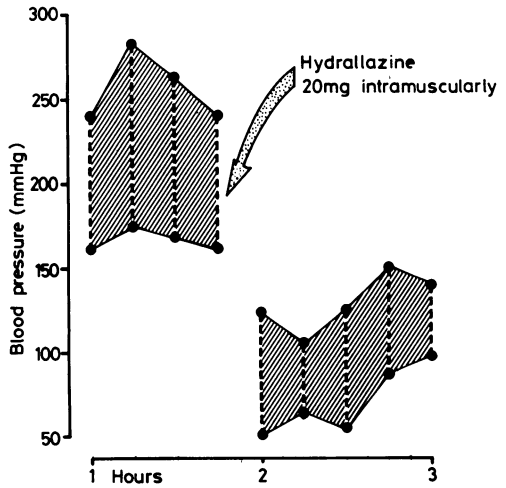
Eclampsia with fits

Control of blood pressure in managing aortic dissection

The extreme hazards of parenteral antihypertensive drugs have become increasingly recognised. If mean arterial pressure is reduced rapidly by more than 25% cerebral ischaemia develops. Reports of cerebral infarction, blindness, and myocardial ischaemia after parenteral diazoxide suggest that this drug should never be given in a dose of 300 mg rapidly intravenously. Smaller doses given slowly are safer.

The presence of very high blood pressures or of malignant hypertension with papilloedema is not an absolute indication for emergency blood pressure reduction unless there is heart failure or encephalopathy.

Bad practice: hardly ever necessary

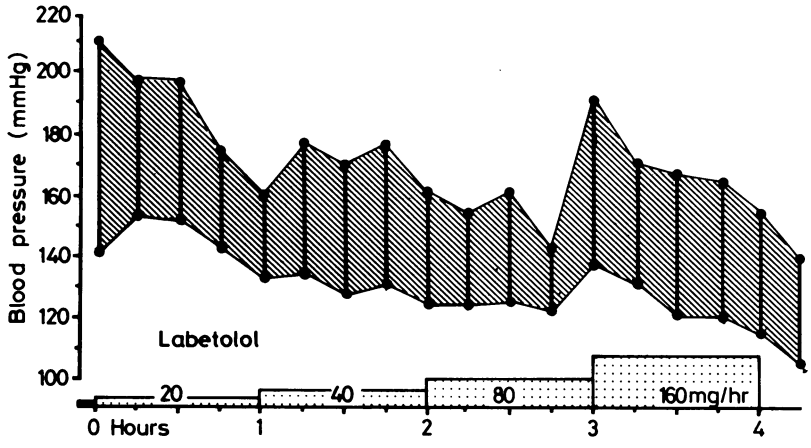


If on admission blood pressure is very high—for example, diastolic pressure is 140 mm Hg or more—it is often safe to give no treatment for a few hours, while measuring pressures every 15 minutes. Blood pressure often falls spontaneously with bed rest even in the presence of malignant hypertension. Nevertheless, antihypertensive treatment is indicated, though pressure can often be satisfactorily reduced with a single oral dose of atenolol or labetalol. The immediate goal should be to reduce diastolic blood pressure to about 100 mm Hg over four to six hours.

If parenteral therapy is really necessary, and such cases are extremely rare, sodium nitroprusside or labetalol by infusion is probably the best agent. Other injectable drugs include diazoxide, hydrallazine, methyldopa, clonidine, and guanethidine.

In the intraoperative management of phaeochromocytoma nitroprusside and practolol are best used to control wide fluctuations in the swings of blood pressure. The preoperative preparation of such cases with phenoxybenzamine and propranolol or with labetolol is important.

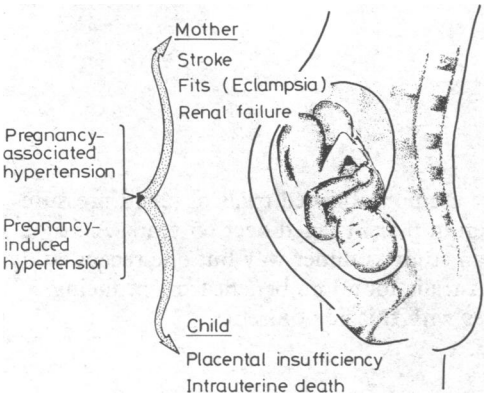
The right way



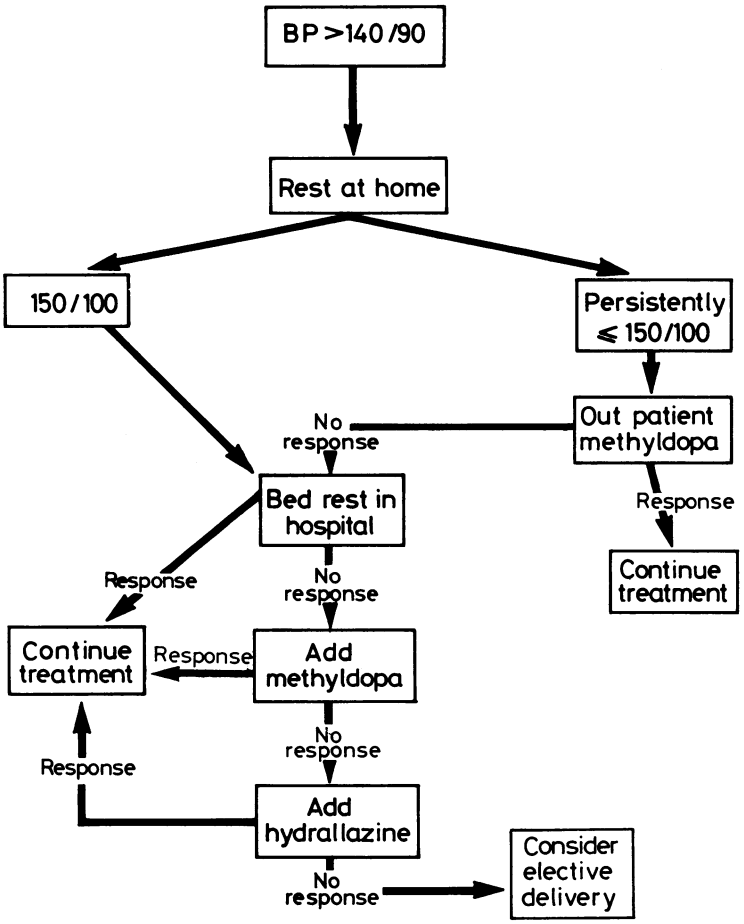
Parenteral antihypertensive treatment

1. Labetalol	40-80 mg/hour by infusion
2. Nitroprusside	1-1·5 μg/kg body weight/min
3. Hydrallazine	5-20 mg intramuscularly or intravenously
4. Diazoxide	50mg mini-bolus injection, repeat as necessary

Treatment of hypertension in pregnancy

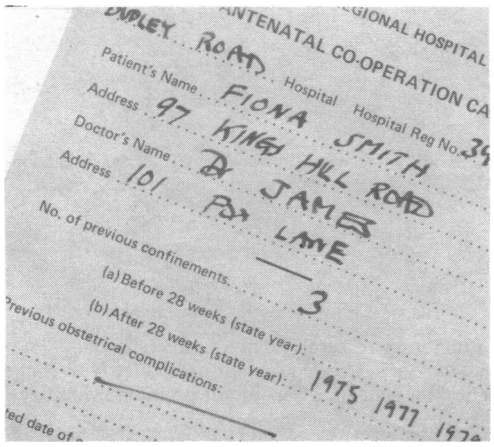


Blood pressures of over 140/90 mm Hg during pregnancy are associated with increased fetal and maternal morbidity and mortality. The incidence of pregnancy-associated hypertension is increased in multiple pregnancies; in patients with diabetes, rhesus isoimmunisation, and pre-existing hypertension; and in teenage mothers. These factors indicate a subgroup who should be particularly carefully screened at antenatal clinic examination. Pre-eclampsia rarely occurs before the 22nd week of pregnancy and hypertension due to other causes is often more easily treated during the second trimester, so complications in management are rare until late pregnancy. Treatment aims at maintaining maternal blood pressure below 140/90 mm Hg while avoiding drugs which might reduce placental blood flow.



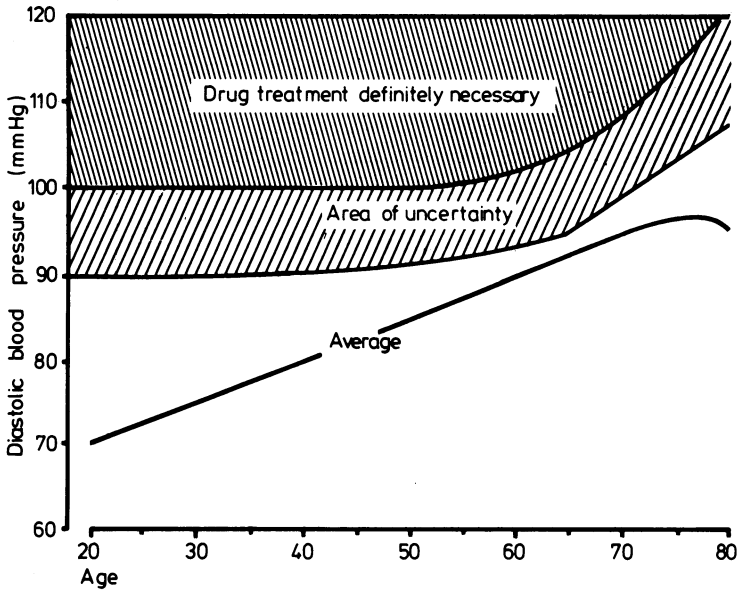
Outpatient management—If at the antenatal clinic the patient is discovered to have a blood pressure greater than 140/90 mm Hg but less than 150/100 mm Hg initial management should be as an outpatient. Methyldopa is the drug of first choice and should be given in doses of up to 3 g/day to secure control. Failure to reduce pressure below 140/90 mm Hg or the presence of complications such as proteinuria and oedema is an indication for hospital admission. Once treatment has started the patient should be seen weekly or biweekly, as drug requirements tend to change as pregnancy proceeds. Side effects such as depression may be a problem.

Inpatient management—Failure to gain control as an outpatient should result in admission to hospital. Simple bed rest with the possible addition of a mild anxiolytic if the patient is agitated may be enough to reduce the blood pressure. Failing this methyldopa should be increased up to 1 g three times a day and then hydrallazine added up to 50 mg three times a day. Unfortunately there is no consensus over a further preparation that is both effective and safe. Diuretics such as the thiazides do not improve the prognosis of hypertension in pregnancy and should not be used. Sympatholytic drugs such as guanethidine and debrisoquine have their advocates. Beta-blockers have also been tried but their use is controversial. If the fetus is viable then delivery should be considered as an alternative.



Severe uncontrolled hypertension, particularly during labour, with pressures over 160/105 mm Hg despite the use of first-line hypotensive agents is often associated with major convulsions, fetal loss, and maternal morbidity. Intravenous diazoxide in a bolus dose is justified. It should be used only twice and the initial dose should be small—100-150 mg. Unfortunately it interferes with the activity of the uterine muscle and it may be necessary to augment activity with oxytocin. Its administration may be accompanied by diuretic treatment to overcome fluid retention. An alternative is labetolol by infusion. In non-pregnant patients labetolol gradually reduces pressure, and this contrasts with the precipitous fall that may accompany diazoxide injection. Ergometrine should not be used during or after delivery, and renal function should be carefully monitored, as there is some evidence that the kidneys are particularly exposed to hypertensive renal damage.

Hypertension in the elderly

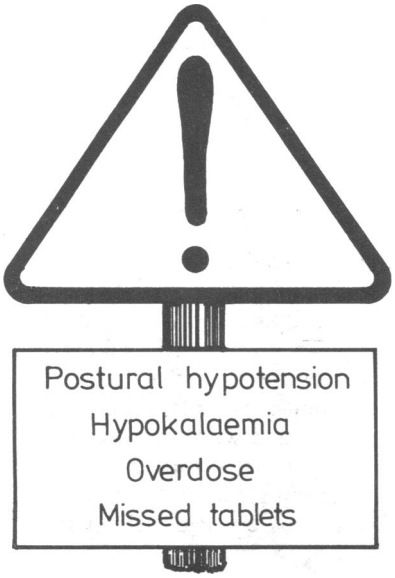


There are no published trials of blood pressure reduction in patients aged over 65 years. A major European study is under way but one recent study from Australia found no benefit from reducing pressures with thiazide diuretics.

The threshold above which treatment should be considered is higher in older patients. Blood pressures of 200/100 mm Hg may probably be left untreated in 70-year-olds, but above this level the doctor might consider drug treatment.

Date	✱	Clinical notes
4/8/80		Collapsed in street, known hypertensive, on bethanidine for years! 210/110 lying 170/70 standing
		STOP BETHANIDINE See in 3/7
7/8/80		Well now 210/110 ♀ 200/110 ♂
		Bendrofluazide 5mgm daily, see 1/12

Beta-blockers are less effective in older patients and thiazides relatively more efficient. For this reason the first-line drug should be a thiazide, with the addition of a beta-blocker if necessary. Hydrallazine is safe but its use should hardly ever prove necessary. Drugs which cause depression or postural hypotension—for example, reserpine, guanethidine, and possibly methyldopa—should be avoided.



Hypokalaemia often occurs in older patients receiving thiazides, and serum potassium concentrations should be monitored carefully. Should the concentration fall below 3·2 mmol/l potassium supplements should probably be given, although adding amiloride may prove sufficient and cause fewer side effects.

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