in arterioles and veins. Captopril, which inhibits the conversion of angiotensin I to angiotensin II and is now widely used as an antihypertensive agent, is also a vasodilator of the veins and arteries and is undergoing trials in heart failure in Britain. Nitroprusside, which is available only for parenteral administration and so is used only in acute heart failure, also dilates vessels on both sides of the circulation.

There are two main clinical indications¹⁰ for treatment of heart failure with vasodilators. Firstly, in acute myocardial infarction, where parenteral administration is frequently necessary, vasodilators may improve pump function, thus lessening pulmonary oedema, and perhaps diminish the area of ischaemic injury. Nevertheless, morphine remains the drug of choice in pulmonary oedema. Secondly, in chronic congestive heart failure refractory to digitalis and diuretics judicious administration of vasodilators may produce remarkable beneficial results.

The choice of vasodilator is determined by the patient's symptoms and signs and by haemodynamic considerations. When the symptoms of pulmonary venous congestion are present and the pulmonary capillary wedge pressure is raised venous dilators such as the nitrates are indicated. When the predominant symptoms in heart failure are tiredness and fatigue and measurements show a decrease in cardiac output and an increased systemic vascular resistance an arteriolar dilator such as hydralazine is more appropriate. If the cardiac output is decreased and the pulmonary capillary wedge pressure is raised, which is probably the commonest finding, a balanced vasodilator such as prazosin may be used.

Nevertheless, several problems are associated with using vasodilators in heart failure. The patient must definitely be in heart failure before the drugs are given and an accurate profile of haemodynamic measurements should be established to choose the appropriate drug.⁷ Symptoms alone are notoriously unreliable, and the chest radiograph is of low diagnostic sensitivity. Some clinicians argue that detailed haemodynamic measurements are unnecessary, but they will admit to the value of using all available information from indwelling vascular catheters.¹¹ In practice, the more deranged the haemodynamics the better seems the response to vasodilators, and patients with these features are more likely to have been intensively monitored.

Next, vasodilators have not been very successful in right heart failure, when the response is most unpredictable.¹² A third perplexing problem is the response to withdrawal of vasodilators: three patients treated with prazosin for heart failure showed appreciable deterioration in their clinical condition after drug withdrawal, but the effect has not been described with other vasodilators.¹³ The final question, and probably the one of the greatest clinical importance, is whether vasodilators do maintain their effectiveness long term. The extent to which possible late decline in effectiveness is due to pharmacological tolerance to the drugs is debatable, but there is little good evidence that these agents prolong life, though the intolerable symptoms of heart failure may be remarkably improved in the short term. Enthusiasts¹⁴ may even see in vasodilators a more logical form of treatment than digitalis for less severely ill patients, and the high incidence of digitalis toxicity in such patients can be cited as a secondary justification for alternative treatment. Only time and further experience will provide the answer.

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Laser treatment of portwine stains

There are no reliable data on the incidence of the portwine naevus. Sadly, in most individuals the naevus shows little or no tendency to fade with time; indeed, with increasing age it usually becomes deeper red or purple.

Histological studies have shown that the portwine naevus is superficial and results from an aneurysmal dilatation and progressive ectasia of the cutaneous vascular plexus.¹ The colour of the naevus seems to be influenced mostly by its red cell content. The typical adult portwine naevus is purple with large, blood-filled ectatic vessels, while the juvenile lesion is pink with small vessels relatively free of red cells. The pathogenesis of this (fortunately rare) vascular abnormality is unknown, but there seems to be no increased risk that the lesion will develop in the offspring of those affected.

No satisfactory treatment was available for the portwine stain until 1976, when Goldman described results obtained with the argon laser.² This type of laser is effective because haemoglobin absorbs to some extent the blue-green laser light (wavelength 488-514 nm), transforming energy into heat and coagulating blood vessels up to 0.5 mm in diameter. The final result is a diffuse, coagulative necrosis of the epidermis and papillary dermis. The adjoining relatively avascular skin appendages remain undamaged and are thus available for reconstruction of what is usually fairly normal epidermis. Histological studies have shown that the abnormal ectatic vessels of the portwine naevus are mostly confined to a 0.6 mm subepidermal zone¹ and so are within the laser destruction range, which extends to the upper 1 mm of dermis. Though the number of new vessels may triple after treatment the number of erythrocytes contained in these smaller vessels is much reduced; the result is that the lesion that formerly appeared purple becomes much pinker.¹

Many patients, including some with other cutaneous vascular lesions, have now been treated.³⁻⁷ Recent studies

have shown clearly that the selection of patients is very important.^{1,3} The purple lesion will always respond better than the younger, pinker one, because with increasing age of lesion there is an increase in numbers of vessels and vascular ectasia, associated with a colour shift from pink to purple. In one recent study no patient over the age of 37 failed to achieve a desirable result,³ while pink lesions generally responded poorly. Sometimes hypertrophic scarring developed after treatment of a pink test area. In most patients under 37 with a red or pink lesion a pretreatment biopsy proves helpful in predicting the outcome.³ Favourable histological features include a fraction of dermis occupied by vessels amounting to over 5%, mean vessel area over 2500 μm^2 , and the proportion of vessels containing red cells over 15%. Adverse factors in prognosis include age of patient under 17 years, pink colour of lesion, vascular area of below 2%, mean vessel area of below 1500 μm^2 , and proportion of vessels containing erythrocytes below 3%.

This work, however, gives little comfort to parents of children extensively affected on cosmetically sensitive areas such as the face. At present, however, the inescapable conclusion is that children under 17 should not be treated with the argon laser; but about 60% of adult patients will do well—and with improved selection of patients the proportion could become much higher. Moreover, with painstaking technique the incidence of scarring after treatment with the argon laser on the face is about 2%—though other body areas, particularly those prone to keloids, are likely to show a higher incidence.⁸

A new development is the possibility of using a much more selective tunable dye laser emitting at 577 nm to treat portwine stains.^{9,10} This emission corresponds to the absorption of light by haemoglobin; its maximum absorption is around 415 nm, but light at this wavelength is not transmitted as deeply into the dermis as an emission at 577 nm, which is also absorbed comparatively well by haemoglobin.

The histological pattern seen after treatment with a tunable dye laser at 577 nm is quite different from that with an argon laser. An acute vasculitis is produced in the upper dermis with a prominent perivascular neutrophilic response in the mid-dermis.⁹ Though focal epidermal necrosis does occur it is minimal, and skin appendages and collagen are preserved. Moreover, the energy required to produce these changes is relatively small. The tunable dye laser emitting at 577 nm is therefore much more selective than the argon laser in that damage is confined mainly to the cutaneous vascular plexus. This greater selectivity may make treatment of portwine stains possible even in children, but much more work will be needed to confirm this optimistic speculation.

Meanwhile, we need to try to standardise nomenclature so that the increasing number of reports can be properly compared and to assess the usefulness of this treatment. Future studies should state the irradiance, laser beam cross-sectional area and shape, laser pulse duration or exposure time, pulse repetition rate, treatment times (with details of treatment intervals), total treated skin area, and the type of laser used with its spectral distribution.¹¹ A method of assessing the final results objectively is also vital, and skin colour measurements using reflectance spectrophotometry¹² should enable the technique to be refined.

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Qinghaosu: a new antimalarial

One of the main problems in tropical medicine today is the spread of resistance to chloroquine, hitherto our most dependable antimalarial for both treatment and protection. Chloroquine has been especially valuable in the control of malignant tropical malaria due to *Plasmodium falciparum*. In the past three years this parasite has developed resistance to alternative antimalarials such as the various combinations of sulphones or sulphonamides with pyrimethamine. This has meant that we could rely on none of the existing synthetic drugs with confidence. The "good old quinine" is still life saving in severe cases, even if tetracycline may occasionally be needed should the response be too slow.¹

The outlook is serious, though not as critical as some authors have suggested. The recent report of the meeting convened by the Ross Institute provides a well-balanced appraisal of existing means of prevention.² Mefloquine, a valuable new compound synthesised and tested by the American Army research group, has not yet been released for wider use since the outcome of field trials is still awaited.³ No wonder that the news of the Chinese discovery of a new and potentially valuable antimalarial has aroused such widespread interest.

As with many other advances in pharmacology, the new Chinese remedy is not really new. A herb called qinghao (qinghao) was first mentioned in the treatise *Fifty-two Prescriptions* discovered in the Mawangdui Han tomb of 168 BC. It was specified as a remedy for fevers in *Zhou Hou Bei Ji Feng* (handbook of prescriptions for emergency treatments) written by Ge Hong in AD 340, and later in the famous *Ban Cao Gang Mu* (compendium of materia medica) written in 1596 by Li Shizhen. The herb was later described by Linnaeus and given the scientific name of *Artemisia annua*. The genus *Artemisia* belongs to the family Compositae, common in northern countries. There are over 100 species of these hardy or half-hardy herbaceous perennials and shrubs growing in many parts of the world; several of them (sagebrush, wormwood, tarragon, absinth) are noted for their aromatic bitterness—whence the generic name, which refers to Artemisia, wife and sister of Mausolus, king of Halicarnassus in the fourth century BC (her sorrow on the death of the king

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