autoinfection, in which reverse peristalsis or upward migration of an adult worm leads to gravid proglottids releasing eggs in the upper gut—tantamount to swallowing the eggs of one's own tapeworm. Direct infection from outside may occur when food or drink is contaminated by human faeces and also by sexual oroanal contact. In Southern Africa witch doctors may deliberately dose their patients with a gruel made from ground up segments of *T solium* and so produce massive cysticercosis.

In man cysticerci are present in the subcutaneous tissues, where they can often be readily palpated; in the muscles, where they are easily visible radiologically once they have calcified; and in the brain and sometimes the eye. It is cerebral cysticercosis that is mainly responsible for the serious symptoms. Cysts vary in diameter from a few millimetres to over two centimetres.

The manifestations of cerebral cysticercosis include epilepsy, raised intracranial pressure, and focal neurological signs—determined by the precise location of the cysticerci and their numbers.[2,3] Until recently the only treatment available was anticonvulsants to control the fits and steroids to control acute exacerbations brought about by the host reaction around the cysts.

Praziquantel is effective against many tapeworms and also has powerful antischistosomal activity.[4] Its first reported use in cysticercosis was in pigs in 1978 and in man in 1980.[5] Since then subjective evaluation has seemed to suggest a favourable response on several occasions.[6-9] The present report is unique in providing for the first time in man objective evidence that treatment with praziquantel can reduce the number and size of the cysts.

The paper describes the treatment of 26 carefully selected patients at the Mexican National Neurological and Neurosurgical Institute. All were adults with a stable neurological state, and none had intracranial hypertension. All had intracranial cysts large enough to allow their progress to be monitored by computed tomography, and most had supporting serological findings. None had radiological evidence of surrounding inflammatory reaction, a factor which might have led to a spuriously favourable response. All cysts were counted and measured before treatment was started, this being praziquantel in three divided doses to a total of 50 mg/kg body weight a day for 15 consecutive days.

Twenty four of the 26 patients had adverse reactions during treatment, mainly severe headache. Twelve patients had fits, and two developed intracranial hypertension, though not severe enough to need steroids or other special measures. All reactions subsided spontaneously after treatment was completed.

Follow up was both radiological and clinical. Three months after treatment two thirds of the cysts had disappeared without being replaced by inflammatory tissue, and their total diameter had greatly decreased. The few patients followed up at six months showed little further improvement. Symptoms and signs at the three month follow up also showed improvement in nearly all patients. The pronounced rise in cells and protein in the cerebrospinal fluid that occurred during treatment had returned to normal by three months. In an untreated control series there was no spontaneous improvement, for new cysts had appeared and existing ones had grown larger. So the effectiveness of praziquantel has been shown beyond doubt, although whether cysts that remain require further treatment with praziquantel is still unanswered.

Nevertheless, the dramatic host reaction that develops around the cysts and in the cerebrospinal fluid during treatment means that praziquantel should always be given with extreme caution under expert neurological and neurosurgical supervision. Inevitably some patients will develop more severe intracranial hypertension than was seen in this small series, and acute obstructive hydrocephalus is always a possibility.

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Oral gold for rheumatoid arthritis

Gold was first used for treating rheumatoid arthritis in the late 1920s in the belief that the heavy metal acted on an infectious agent responsible for the disease.[1,2] It was introduced into Britain by the late S J Hartfall[3,4] and several years later controlled trials throughout the world confirmed its efficacy.[5-7] Careful studies showed that it improved both biochemical and clinical indices of the activity of the disease.[8]

Gold fell out of favour again with the arrival of the flood of new anti-inflammatory drugs, but there has been a recent resurgence of interest with the publication of two symposia, sponsored by Smith Kline and French, the makers of an oral gold compound (Auranofin),[9,10] and of an extensive review.[11] This fresh interest has stemmed from several observations. Firstly, non-steroidal anti-inflammatory drugs are now generally recognised to be merely palliative in treating rheumatoid symptoms. Moreover, these drugs are only partially effective and many patients take more than one preparation. They have many side effects and in the long term they may increase joint damage. Secondly, clinicians persist in their desire for, and debate about, drugs which may alter the course of rheumatoid arthritis. Though preparations such as gold, penicillamine, hydroxychloroquine, and sulphasalazine are often termed "anti-rheumatoid" or "remission inducing," so many doubts persist that many prefer the term "second line agents." Early trials showed that gold treatment was effective against symptoms but had no effect on erosions.[12] More recently, serial radiography over five to six years has shown a less severe progression of destructive changes in patients treated with a full gold regimen than in those who discontinued the drug because of toxicity,[13] and Sigler *et al* reported that gold slowed the rate of the appearance of new erosions.[7] The third factor has been the development of an oral gold preparation which promises to be less toxic than the intramuscular drug.

Intramuscular gold is available in Britain only as sodium aurothiomalate. In the United States aurothioglucose is also

marketed; the two seem comparable in their effects. The standard course is 50 mg weekly to a total of 1 g. Possibly the earlier treatment is started the better the result.[14] McKenzie has advocated lower doses of gold, though the incidence of side effects has proved similar.[15] Maintenance treatment is useful, but its frequency is still debated.[16] Rothermich *et al* stated that four weekly injections were not sufficient and would result in many cases of relapse.[17] Griffin *et al*, however, found that improvement was equally well maintained with two or four weekly intervals between 50 mg maintenance injections, and that toxicity was less with the four weekly intervals.[18]

The mode of action of gold is still not clear; the thiol group may be the important part of the molecule rather than the metal.[19] The drawback of intramuscular gold is its considerable toxicity: rashes are especially common and up to one third of patients have to be withdrawn early in the course; few maintain their treatment for two years.[5] Neither the toxicity nor the effectiveness is related to plasma concentrations of the drug.[20-22] Resistance to treatment has been ascribed to the binding of gold to metallothionein in cells.[23] Side effects, particularly proteinuria, are associated with the HLA antigen DR3, while to some extent DR7 is protective, but the associations are weak and do not correlate with the severity of adverse reactions.[24 25]

The new oral preparation of gold, Auranofin, has been extensively investigated. It avoids the disadvantage of intramuscular injections, but absorption of gold from Auranofin is variable and relatively poor: most of the dose passes out in the faeces. Total gold concentrations in the blood during treatment are considerably lower than after intramuscular gold. Free gold concentrations, however, may be comparable between treatments. The blood half life of Auranofin varies between 10 and 30 days, and only a small fraction of the dose is excreted by the kidneys. The side effects of Auranofin are less than of intramuscular gold[26 27]—good news for a drug which has been associated with more iatrogenic mortality per prescription than any other antirheumatic preparation.[28] The main adverse reaction is diarrhoea.[26] Analysis of several thousand patients treated with oral gold shows that a rash (which occurs in a third of patients having intramuscular gold) is produced half as commonly, alopecia (which is much less frequent) twice as often, taste disorders and stomatitis about equal, and thrombocytopenia half as commonly. Albuminuria occurs with a similar incidence of 4-5%.

Oral gold is an active preparation compared with placebo,[29] and appears comparable in efficacy with hydroxychloroquine.[30] The optimum dose appears to be 6 mg daily, best given in two divided doses of 3 mg.[31 32] One interesting finding is that Auranofin will suppress adjuvant arthritis in rats—in contrast with other second line agents, including intramuscular gold[33]—suggesting that it may essentially be a non-steroidal anti-inflammatory agent. Its diminished potency and fewer side effects compared with intramuscular gold may be due to the fact that only 15-25% is absorbed.[34] Little experience with Auranofin has been reported in diseases other than rheumatoid arthritis, but it may be helpful for patients with psoriatic arthritis[35]—as may intramuscular gold[36]—with no greater risk than in rheumatoid arthritis of toxic skin reactions.[37]

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The third drug in hypertension

Evidence suggests that prolonged control of raised blood pressure will prevent the complications of stroke and renal impairment, and to a less extent myocardial infarction.[1-3] The choice of a first line drug in patients with mild to moderate hypertension usually lies between a β adrenoceptor blocking drug and a thiazide diuretic. Opinion is, however, turning against the prolonged use of thiazide diuretics, at least in the high doses currently used.[4] If neither of these agents alone controls pressure satisfactorily the conventional practice is to give them together, either as separate tablets or in a combined preparation. But what should the doctor do if treatment with diuretics and β blockers together fails to control the blood pressure? Should he wipe the therapeutic slate clean and start again, or is there a place for adding a third drug to the regimen? Here the increased risk of poor patient compliance with complicated drug regimens