

was diagnosed as subacute myelo-optic neuropathy (SMON).<sup>5,6</sup> There is strong circumstantial evidence that clioquinol caused this condition. Patients with subacute myelo-optic neuropathy were highly likely to have taken clioquinol (a hydroxyquinoline), and the number of cases fell dramatically after clioquinol was withdrawn from Japan.<sup>7,8</sup> In an analysis of neurotoxicity of hydroxyquinolines in countries other than Japan Baumgarten *et al* found that about half of the reported cases of neurotoxicity were probably (or possibly) related to hydroxyquinolines; these adverse effects, especially isolated optic atrophy in children, have occurred throughout the world. The association with neurotoxic reactions has led to the banning of gradual withdrawal of hydroxyquinolines in some countries. But hydroxyquinolines such as di-iodohydroxyquinoline (iodoquinol) are still widely marketed under many brand names in both developed and developing countries. Hydroxyquinolines are also available combined with other drugs that have no proved therapeutic effect for treating acute diarrhoea but carry additional risks of adverse reactions.

There is a large discrepancy between the adverse effects mentioned in most pharmacopoeias<sup>10-12</sup> and those listed in package inserts. In Egypt in 1986 package inserts for combination drugs containing di-iodohydroxyquinoline (Diamycin dry suspension, Cabion forte, Paramibe compound, Enteroguanil suspension) included indications such as non-specific infections, summer diarrhoea, food poisoning, bacillary dysentery, enteritis, and dyspepsia; use of the drug as an intestinal antiseptic was also advocated. None of these package inserts contained any information about the adverse effects associated with di-iodohydroxyquinoline.

The notions of "recommended dose" and "duration of treatment" often lose their relevance in the developing world, where uncontrolled sale of drugs to illiterate consumers is common. One study of subacute myelo-optic neuropathy in India showed that almost half of the patients with diarrhoea seen by a medical consultant had taken more than the total recommended dose of hydroxyquinolines before they visited the doctor.<sup>13</sup>

The essential drugs policy of WHO is designed to encourage treatment of common diseases with drugs of proved efficacy and safety. It also helps to ensure that concise, accurate, and comprehensive information from unbiased sources accompanies the drugs.<sup>14</sup> No halogenated hydroxyquinoline preparation is included in the WHO essential drug list. Oral rehydration treatment is the only proved cost effective method to treat acute diarrhoea routinely, and the economic saving from treating diarrhoeal diseases according to the WHO recommendations should be considerable.<sup>15</sup> Hydroxyquinoline derivatives have now been banned or withdrawn in many countries including Bangladesh, Cyprus, Denmark, Italy, Japan, and the Philippines; and clioquinol has been banned in the Dominican Republic, Malaysia, Nepal, Pakistan, Spain, Sweden, and the United States.<sup>16-18</sup>

Immediate action is needed on the remaining long list of currently marketed products containing hydroxyquinolines alone or in combination with other ineffective and possibly dangerous drugs. Proper labelling of side effects and information about the questionable therapeutic effect of anti-

diarrhoeal drugs are clearly needed, but they will not prevent their continued extensive and unnecessary use. Many hydroxyquinolines are produced by national companies, and their availability may be limited by restrictions on local manufacture. The fact that di-iodohydroxyquinoline is now marketed in countries where clioquinol has been banned illustrates the present inconsistency in policy.<sup>19</sup> Health policy makers, health professionals, and drug companies are responsible for the mismanagement of diarrhoeal diseases in developing countries, and not until all these anti-diarrhoeal drugs have been removed from counters worldwide will this scientific and ethical credibility be restored.

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## Correction

### Radiology about to go digital

A printer's error occurred in this editorial by Dr Richard M Dawood (5 August, p 340). The work has been largely conducted by physicists, computer scientists, and engineers and not by psychiatrists as published.