were indeed the primary causes of hepatospleno-megaly, should lead to a diagnosis of these symptoms and an improvement in the general condition of the patient.

The use of allopurinol to inhibit XO was not considered, as its efficacy in viral treatments is dosage dependent with no evidence of toxicity (Maeda, personal communication). Instead, glycyrrhizin, commonly used in viral hepatitis B in Japan, was given because of its anti-XO inhibitory activity.③ In addition, as cysteine via glutathione reduces XO to its dimeric form, its precursor methionine was given.④

Omega-3-fatty acids have the advantage of inhibiting both XO,⑤ and INOS,⑥ and were administered in the form of salmon oil. The addition of NOsc inhibitors of acetylcholine, alpha tocopherol,⑦ beta carotene,⑧ and niacinamide,⑨ Ascorbic acid was given to stabilize the reduction of alpha tocopherol.

The patient was treated with this combination, designed to be a more natural means of eradicating the symptoms of these two enzymes avoiding any possible complications potentially occurring from massive dosages of any agent alone. The treatment was begun on Saturday evening in June, 1995. In 24 hours the child was remarkably improved. In the week following, the patient's hepatospleno-megaly, no fever, no malaise and no empirical signs that he had ever even been ill. He was continued on this treatment for a week, after which he was only maintained on the omega-3 fatty acids. He exhibited no signs of residual illness for the next 5 months to ensure that he had not merely developed a temporary remission. It is not yet fully determined if the entire treatment was the result of only the inhibition of XO and INOS; however, it does indicate that there are possibilities for treatment, using this theory as a model, until we can substantiate in animal models whether or not the pure inhibitors of these enzymes are as effective as the natural inhibitors. The advantage of the natural compounds is the lack of side effects and toxicity, which has not yet been shown with the new chemical inhibitors of NOs.

The fact that many other biochemical inhibitors are honored by these compounds is not to be denied; nor is it to be totally assumed that by inhibiting only these two enzymes one would see such incredibly rapid results as we witnessed in our patient. Follow up studies are necessary to determine the liability of the application of this new method of treatment in viral diseases.

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4. Fukushima T, Sekizawa K, Yamaya M, Oikawa S, Nagai T, Ota H, Inoue K. Increase in serum xanthine oxidase activity in rats given medium- and long term effects of pertussis vaccine may well put a lot of parents off vaccination if informed consent were to be required prior to vaccination.

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Control of pertussis

The recent leading article by Lennon et al suggests that booster doses of pertussis vaccine at 5 years of age and perhaps into adulthood should be further explored. However, these extra injections offer no benefit to their recipient and a mother could reasonably argue that her 5 year old is to be exposed to the risks of pertussis vaccination in the hope of protecting someone else's infant from the risks of infection. Whipping cough is generally a mild illness even in the very young.④ In Jenkinson's series of 500 consecutive cases one of the 15 children aged under one developed pneumonia. She was 1 week old. In an Italian study① there was no clinical history of pertussis in 215% of children under 4 who had positive antibodies. This indicates that those children got nothing worse than a cold as a result of their infection with pertussis.

Those children are essentially incompatible with the assertion in the Lennon et al paper that there is a "25-50% chance of an infant with pertussis less than one year of age being admitted to hospital."② That quote is based on data from a paper whose parameters were so different to ours that they are almost incomparable. The statistics may only overestimated the proportion of infants under 1 year of age who required hospital admission as the result of pertussis infection.

Those children with subclinical infection, those with minor symptoms who weren't taken to a doctor, those with mild illness in whom a diagnosis of pertussis was not made, and those whose infection was not notified for whatever reason were all excluded from the study's denominator. This introduced a fatal bias into the calculations which has a political rather than scientific use as a result.

There is no denying that whooping cough can be a serious illness. However the vagina efficacy of the vaccine remains very low. Vaccine efficacy falls to around 50% after 4 years.③ Short time adverse effects reported in a large study of 16 572 DTP immunizations included:

- redness at injection site 37.4%
- swelling at injection site 49.0%
- pain 50.9%
- fever (> 38°C) 46.5%
- drowsiness 53.4%
- irritability 6.2%
- anorexia 29.9%
- persistent crying 3.1%

This is an impressive list and in comparison with known and understood medium and long term effects of pertussis vaccine may well put a lot of parents off vaccination if informed consent were to be required prior to vaccination.

Until the recent leading article① the aim of current vaccination policy had been to reduce (half) hospital admissions of those aged under one suffering from whooping cough.4 This was to be achieved by universal vaccination with a three dose regimen. However, a recent vaccination status is not the major determinant of hospitalisation. The Glasgow study③ showed that overcrowding in households and parental unemployment were more important. An Australian study undertaken during the 1982 epidemic④ found that "If we were to treat LBC in the same way as we would to treat PTB, the LBC outbreak would indeed be more likely than to be conducted from a home environment.

The control of pertussis in New Zealand is not a simple issue yet simplistic solutions are again being offered. The beauty of these solutions is that their failure can be blamed (unfairly) on parents whose children are not vaccinated.
Immunisation is a sacred cow and we have lost the ability to critically examine immunisation policies. We now regularly expose adults to the risks of diphtheria immunisation when there is no diphtheria in New Zealand. Yet how often is a tetanus vaccination preceded by the obtaining of informed consent? Indeed how many vaccinators are truly capable of fairly presenting the case against diphtheria vaccination?

Pertussis cannot be eradicated from New Zealand using the current vaccine as it gives only partial protection against infection and does not prevent (although it reduces) transmission.

One unforeseen consequence of universal age-cohort pertussis vaccination has been the development of susceptible parents who have lost their vaccine induced immunity and are now liable to infect or be infected by their infants.

The aim of halving the number of children aged under one admitted to hospital with pertussis will more reliably be achieved by full employment and the provision of adequate housing for all than by any immunisation campaign. This is a political problem and it is inappropriate for public health workers, no matter how well intentioned, to accept responsibility for it.

There is a good argument for healthy children who live in uncrowded well off homes, especially those born in the 2 full years between epidemics, to be left to acquire immunity as the result of natural infection — such immunity may well follow subclinical infection and will probably be lifelong.

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