Correspondence

Hydrogen breath test in gastroenteritis

Sir,

Having been concerned in breath hydrogen testing during a 3-year period (950 patients), we were surprised at the findings of Gardiner *et al.*¹ and in particular at such statements as 'the hydrogen breath test was not an appropriate technique for detecting it' (lactose intolerance in gastroenteritis). Their assessment of the usefulness of this test differs considerably from our own, and others,²⁻⁴ and the reasons for this need to be determined to restore clinicians' confidence in the hydrogen breath test.

The test dose of lactose we use, and the one most commonly used by laboratories, is 2 g/kg, and closely approximates physiological conditions. Therefore test doses of 0.5 g/kg may be inappropriately low when attempting to assess concordance of the hydrogen breath test and clinical results. Using Gardiner's criteria for an abnormal breath hydrogen rise, 8 (40%) of 20 post-gastroenteritis patients given 2.0 g/kg lactose had an abnormal breath hydrogen rise in his series. This figure is similar (38%) to our findings soon to be published.

Differing conclusions from the same data seem to be related to the interpretation of clinical intolerance. We often do not find symptoms of intolerance in the 24 hours after the test dose of lactose, but in every case in our series in which lactose malabsorption was demonstrated by hydrogen breath tests (38 patients), the patients responded positively to lactose withdrawal. A lack of symptoms during and immediately after breath hydrogen testing, but response to a lactose-free diet, has been reported elsewhere.⁵ It appears that none of the 8 patients with abnormal breath tests in Gardiner's series was given a trial of a lactose-free diet in order properly to assess the clinical response.

There is the potential for a false-positive breath hydrogen test as outlined by Solomons *et al.*⁶ whereby lactose in whole milk may be better tolerated than lactose in water, presumably due to the effects of differing gastric emptying rates, but we have not encountered this problem. We agree that false-negative results can be obtained, but in our experience this is almost always due to either recent antimicrobial therapy, the effects of which can persist for at least a month, or to some mechanical failure of the breath test—for example vomiting of the test dose or premature termination of sampling.

It is worth remembering the importance of intraluminal pH and its effect on hydrogen production as outlined by Perman *et al.*⁶ This may be part of the mechanism responsible for the reportedly lowered hydrogen responses in children with active diarrhoea,⁷ although with our methodology⁸ and by fasting the patients overnight, we did not find this effect.⁹

We believe that the hydrogen breath test in the assess-

ment of carbohydrate malabsorption is valuable provided the potential for false-negative and false-positive results is appreciated, and care is taken to ensure that the methodology is designed to circumvent these pitfalls. We have found excellent correlation between breath hydrogen tests and the effects of dietary intervention, and as a consequence, have had to cope with an ever increasing demand on this service by informed clinicians.

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Dr Tarlow and co-workers comment:

Dr Robb and Dr Davidson make many points and it seems reasonable to deal with each separately:

(1) Our assessment of the value of the breath hydrogen test differs from theirs and that of others. They have not published their own results and it is therefore not possible for us to comment on them, but none of the three references they quote deals with the role of breath hydrogen testing in the course of acute gastroenteritis. Two use it in the diagnosis of hyposucrasia (one in adults and one in children) and the third discusses its role in a