

PostScript

LETTERS

ALTE and gastro-oesophageal reflux

McGovern and Smith¹ have embarked on the welcome development of an evidence based algorithm for the investigation of infants presenting with an apparent life threatening event (ALTE). Unfortunately, they do not distinguish between coincidence and causality. Recurrent vomiting occurs in over 60% of 4 month old babies,² and it is therefore unsurprising that gastro-oesophageal reflux is commonly found in infants presenting with ALTEs. The aim of their study was to determine the diagnoses reported after the first evaluation of an ALTE, but the paper's title then somewhat misleadingly refers to "causes" of ALTE.

Despite the fact that in six of the eight studies analysed, patients did not routinely undergo pH monitoring, one of the most common diagnoses made was "gastro-oesophageal reflux disease" (GORD). This begs the question as to whether most if not all of the children merely had physiological gastro-oesophageal reflux (GOR), wrongly defined as GORD, simply because of the ALTE under investigation—an unwarranted assumption of causality. Moreover, they fail to point out that the milk scans and contrast studies used in some of their cited studies have unacceptably low sensitivity and specificity in the diagnosis of non-physiological GOR.

Their suggested plan of investigation acknowledges that in around 50% of infants experiencing an ALTE, a careful history and examination will point to an underlying diagnosis. Conversely, in the absence of other symptoms (for example, vomiting) they imply it may be important to identify and treat occult reflux by recommending investigating for GOR. Demonstration of a significant temporal relation between lower oesophageal acidification and apnoea is crucial in establishing a causal hypothesis linking the two. However, when Arad-Cohen *et al* explored the relation between GOR and apnoea in infants with a history of ALTE³ during polygraphic recording, only 19% of 741 brief apnoeas were coupled with GOR, and of these, apnoea preceded rather than followed GOR in the vast majority. The concept of an "ALTE-sudden infant death" spectrum in which GOR plays an important role is no longer widely accepted.⁴

We argue that there is no need to perform tests for GOR unless there is a suggestive clinical history such as vomiting during or after feeds, poor weight gain, feed refusal, etc. Under these circumstances pH monitoring (whatever its limitations)⁴ remains the investigation of choice. A reliance principally on contrast studies and clinical history is likely to mean that physiological "GOR" will be diagnosed as "GORD". This may lead not only to unnecessary treatment, but also focus attention away from serious disorders including factitious illness.⁵ We regard pH

monitoring in children who have experienced an ALTE but have no clinical pointers to GORD as being of little value, and contend that there is no evidence base for such an approach.

J W L Puntis, I W Booth

The General Infirmary at Leeds, UK;
john.puntis@leedsth.nhs.uk

Competing interests: none declared

References

- 1 McGovern MC, Smith MBH. Causes of apparent life threatening events in infants: a systematic review. *Arch Dis Child* 2004;**8**:1043-8.
- 2 Nelson SP, Chen EH, Syniar GM, *et al*. Prevalence of symptoms of gastroesophageal reflux during infancy. *Arch Paediatr Adolesc Med* 1997;**151**:569-72.
- 3 Arad-Cohen N, Cohen A, Tirosh E. The relationship between gastroesophageal reflux and apnea in infants. *J Pediatr* 2000;**137**:321-36.
- 4 Puntis JWL. 'Apparent life threatening events' in sleeping infants: is gastroesophageal reflux ever to blame? *J Clin Forensic Med* 2003;**10**:97-101.
- 5 Meadow R. Suffocation, recurrent apnea, and sudden infant death. *J Pediatr* 1990;**117**:352-7.

Authors' reply

We appreciate the thoughtful comments on our recent paper.

The main points raised by Dr Puntis and Booth are:

- Most of the studies in this review did not diagnose GORD by the accepted criteria
- The issue of causality was not addressed
- They recommend investigating for GORD only when there is corroborating clinical information because occult reflux does not cause apnoea.

We agree that the diagnosis of GOR disease requires a combination of clinical information and selective testing. We acknowledged in our paper that there were varying investigative protocols for this disease. We were unable to review the diagnostic criteria for all studies. This reflects the lack of one standardised, well validated test. pH probes have limitations as well because they do not detect non-acid reflux. The clinicians in the studies reviewed reported GORD as a diagnosis after an ALTE, but did not say it caused the ALTE.

The issue of causality was clearly addressed in the discussion and we agree that it is a very important point for exactly the reasons which Drs Puntis and Booth highlight. To repeat, we have said that the detection of a disorder after an ALTE does not necessarily mean that the two are associated. We noted that there was conflicting evidence as to whether or not the relation between GORD and ALTEs is causal. Even when an underlying disorder such as RSV infection (which seems to have a clear temporal relation with an ALTE) is

detected, the question is still unresolved as to why some infants react to RSV infection with apnoea while others do not.

It is likely that several factors interact to produce an ALTE. We do not think the relation between GOR and apnoea has been clearly established in the medical literature. Drs Puntis and Booth write that demonstration of a significant temporal relation between lower oesophageal acidification and apnoea is crucial in establishing a causal relation between the two. However, in an editorial review of GOR and infant apnoea, it is noted that GOR and apnoea may have a causal relation that is not necessarily temporal.¹ Given the current state of conflicting evidence, it would seem reasonable to investigate the upper gastrointestinal tract according to our algorithm (see discussion below). We agree that the paper could be titled "Diagnoses reported after apparent life threatening events in infants: a systematic review". The abstract, however, summarised the aims, results, and conclusions of the review.

We have not advocated a blanket investigation for GORD in all ALTEs. We have designed our algorithm with several selection points. The algorithm indicates that if the patient does not have a short, self-correcting episode around feeding (often physiological GOR), then a period of observation (including a review of history and examination) is indicated. Then, if the history suggests GORD, appropriate testing is performed. This is no different from the approach suggested by Drs Puntis and Booth. If no cause is forthcoming and the clinician is concerned about the event, we do recommend a series of investigations, which include investigation of the upper gastrointestinal tract. Perhaps the algorithm would be more accurately written as investigation of the upper gastrointestinal tract instead of investigate for gastro-oesophageal reflux to acknowledge the possibility that anatomical abnormalities of the gastrointestinal tract may present with an ALTE.

The problem of ALTEs is one faced daily by frontline clinicians. The purpose of our review was to try to bring some clarity and order to conflicting literature. We view this paper as a starting point for an evidence based approach. We invite further discussion.

M B H Smith, M C McGovern

Craigavon Area Hospital, Northern Ireland, UK;
msmith@cahgt.ni.nhs.uk

Competing interests: none declared

Reference

- 1 Amin RS. Gastro-oesophageal reflux and infant apnoea. *J Pediatr* 2000;**137**:298-300.

Diagnosis of iron deficiency anaemia

According to Wright *et al*, taken in isolation, a mean cell haemoglobin (MCH) of <25 pg is