enclosed. The child was completely asymptomatic and there was no history of cyanosis, choking, gasping, coughing and/or wheezing.

Alas! Accident and Emergency Medicine is an art not always amenable to scientific dissertation—not even retrospective ones!

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Chest pain: a late complication of seat-belt injury?

Sir

Injury to the rib cage of car occupants is recognised as a common, clinically obvious and immediate consequence of frontal impacts. Delayed presentation of injury to thoracic contents—particularly the aortic arch—is also recognised (Parmley *et al.*, 1958). Seat-belts reduce the incidence and severity of both types of injury (*British Medical Journal* Editorial, 1977) but the belt itself may inflict damage, although this is likely to be far less serious than if the occupant had been unrestrained. This 'seat-belt syndrome' has been described (Shennan, 1973; Christian, 1976) as an immediately evident and usually minor complication of belt use. Here we present a case in which it is suggested that the onset of such symptoms may be delayed.

A 34-year-old woman complained of recent onset of acute frontal chest pain, and was referred by her general practitioner for exclusion of either cardiac or upper gastrointestinal disease.

Two years previously she had been involved in a motorway accident whilst driving a

car and wearing a seat-belt. Her car had struck the central crash barrier at speed and ricocheted twice across the carriageway before impacting head on into an overhead gantry-support. The only immediate evident injuries were a severe 'whiplash' injury, minor abrasions to the nose and lips, scalp bruising, and right hip and ankle pain. After appropriate 'first aid' treatment she was managed on an outpatient basis with a cervical collar. Long-tract symptoms in both arms slowly resolved over the next few months.

The pain in her chest started about one year after the accident. It had a 'sharp, cutting quality' and was aggravated by movement and turning. There was tenderness above the right breast, in the lower left ribs and along the sternum, particularly at the costochondral and chondrosternal junctions. There were no symptoms to suggest a cardiac or oesophageal cause for these complaints. Barium meal and ECG examinations were normal, and blood tests did not suggest a 'rheumatic' aetiology.

A series of local injections of 0.5% marcaine and hydrocortisone into the painful areas of the rib cage was commenced. After two courses of injections, the only sites of remaining discomfort were the upper right second, third and fourth costochondral junction. Additional relief was obtained with the intermittent use of anti-inflammatory drugs.

This patient was intelligent, ambitious and highly-motivated, and had returned to work prior to the onset of her chest pain. She had not connected her new symptoms with the motorway accident until specifically questioned about possible traumatic events in the past. She was much more concerned that she might have angina or need surgery for gastro-oesophageal reflux.

Severe loading of the thorax produces major stresses on the rib cage (Viano, 1978) and deformation at the costochondral junctions may be substantial without demonstrating any radiological abnormality. It seems likely that, in this case, deceleration forces were concentrated on the rib cage adjacent to the seat-belt, and a degenerative process was initiated at the articulation of ribs, costal cartilages and sternum only to become clinically manifest many months later.

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