Reply to Dr. Rosado's letter regarding 'Humeral fracture in non-ambulant infants — a possible accidental mechanism'

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Sir,

I thank Dr. Rosado for his interest in our paper, "Humeral fracture in non-ambulant infants — a possible accidental mechanism" [1], the purpose of which is to provoke discussion. His major criticism is that we "completely disregarded ... the force required for a bone to fail" [2]. It is true that we did not specifically address issues of force. It is also true that the question of what force is required is always asked of the expert in court proceedings. But what is the force and how do we measure it? The answer is that we simply do not know, and Dr. Rosado does not enlighten us on the subject. The referenced bio-mechanical paper by Pierce [3] states the following limitations:

Concepts and the current level of understanding of fractures, of the magnitude and direction of loading required to produce specific fracture types in developing bone, is limited. This limitation of knowledge is due, in part, to the lack of experimental research that has been done in human infant specimens, and to the lack of an ideal model for investigation of bone strength and likelihood of fracture in immature bone [3].

What we do know from Hymel and Jenny [4] is that it is within the power of a 3-year-old child to generate sufficient force to fracture the humerus. However, throughout our paper we emphasized that there is no proof that this mechanism is possible, and we fully appreciate the improbability and contentiousness of the proposal.

This brings us to Dr. Rosado's final point, namely that we should not be swayed by the fact that the carers maintained the

same story as to how the injury occurred throughout, or that the injury was solitary. The first response is that we are not swayed in so much as we do not claim that these injuries were caused accidentally. However, in our experience a characteristic of non-accidental injury is an inconsistent and changing history as the investigation proceeds. The converse may not be true, in that consistency does not equal truth. However, in each case presented it is axiomatic that either the carers are lying and the true mechanism for the fracture has not been given and is thus probably non-accidental, or the carers are telling the truth. We do not claim to know the answer and we accept that following discussion, the experience of others and emerging evidence the proposal may be proved wrong. To quote Mark Twain, "What gets us into trouble is not what we don't know. It's what we know for sure that just ain't so."

References

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