



The American Journal of Forensic Medicine and Pathology: Volume 21(1) March 2000 p 93

## Letters to the Editor

Chan, Theodore C. M.D.; Vilke, Gary M. M.D.; Neuman, Tom M.D.  
San Diego, California

## Authors' Reply

*To the Editor:*

We thank Drs. Reay and Howard for their comments and interest in our review article on restraint position and positional asphyxia recently published in the journal (1). As we noted in our article, Drs. Reay and Howard performed much of the early investigation on custody deaths and the hogtie restraint position (2). We share their concern that the pathophysiology of these deaths remains poorly understood and the issue clouded by a multitude of "preconceived conjectures."

Based on current research, we agree the hogtie position is "inherently neutral" and should "not produce serious physiologic consequences" in terms of respiratory function. Our study in human subjects found a small change in pulmonary function testing but no evidence of hypoxia or hypoventilation while in this position (3). Animal studies in which rats subjected to cocaine and restraint with "ample room for breathing" had a markedly higher mortality rate suggest that respiratory effects do not play a role in these deaths (4).

We agree that other factors associated with these restraint deaths, especially sympathomimetic intoxication, demand additional study. In addition, physical exertion, body habitus, and other physiologic stress should be investigated further. We have recently undertaken a study investigating the effects of oleoresin capsicum pepper spray on respiratory function. In addition, we plan to study the impact of compressive weight force on pulmonary function in human subjects while restrained.

We empathize with our colleagues in forensic medicine who must often assign causality when few pathologic findings are present to aid them in these cases. We wholeheartedly agree with the recommendation that a national uniform database on custody deaths be established to facilitate data collection and analysis. Until much more information is available, we recommend great caution in ascribing causality in these cases.

Theodore C. Chan, M.D.  
Gary M. Vilke, M.D.  
Tom Neuman, M.D.  
San Diego, California

## REFERENCES

1. Chan TC, Vilke GM, Neuman T. Reexamination of custody restraint position and positional asphyxia. *Am J Forensic Med Pathol* 1998;19:201-5.  
[\[Fulltext Link\]](#) [\[Medline Link\]](#) [\[Context Link\]](#)
2. Reay DT, Howard JD, Fligner CL, Ward RJ. Effects of positional restraint on oxygen saturation and heart rate following exercise. *Am J Forensic Med Pathol* 1988;9:16-8.

[\[Medline Link\]](#) [\[Context Link\]](#)

3. Chan TC, Vilke GM, Neuman T, Clausen JL. Restraint position and positional asphyxia. *Ann Emerg Med* 1997;30:578-86.

[\[Context Link\]](#)

4. Pudiak CM, Bozarth MA. Cocaine fatalities increased by restraint stress. *Life Sci* 1994;55:379-82.

[\[Context Link\]](#)

© 2000 Lippincott Williams & Wilkins, Inc.