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Developing Models and Changing Paradigms in CAD Trauma

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"The more things change, the more they are the same." So go the sage words attributed to so many wise men over the years. This epigram resonates with the guarantee of history - in most instances, anyway - but not in my corner of the world: cervical acceleration/deceleration (whiplash) trauma. In the 24 years I've been studying this phenomenon, I've seen measurable changes in key areas - mostly for the good.

In 1980, our conceptual model of CAD injury was embarrassingly simple: hyperextension followed by hyper-flexion - biomechanics that damaged ligaments and muscles in the process. The resulting clinical condition, CAD, was chiefly thought to be the result of myofascial pain. Of CAD's neurology, we understood even less. But that simple construct has given way to a more complex, research-based model that explains the clinical picture better than ever. And the picture is still unfolding, with ongoing cadaver studies, crash tests using live human subjects and the new rear-impact dummies, not to mention all of the clinical and epidemiological research. Because of this progress, diagnostics, case management, and, perhaps most importantly, prevention, are greatly enhanced.

Crowding the margins of science and medicine are the people who make and enforce the laws, those who pay the bills, and those who manufacture the vehicles driving this still-growing public health pandemic. Complicating the matter, of course, is that their goals rarely coincide. Insurers lobby lawmakers to force manufacturers to build ever-safer vehicles while promoting collateral strategies to indemnify themselves from liability, such as no-fault laws and deceptive "educational programs" that foster homogenous disbelief among their claims personnel.

Manufacturers also lobby lawmakers for minimalist changes in Federal Motor Vehicle Safety Standards (FMVSS), bemoaning catastrophic retooling and R&D costs, conflicts with Corporate Average Fuel Economy (CAFE) regulations, and competitive disadvantages. Lawmakers compromise with gradual changes, such as the nonobligatory New Car Assessment Program (NCAP) and a steady trickle of

(never-sweeping) changes in other federal regulations. (Some of these changes, such as the NCAP and seat back stiffness regulations, have actually resulted in a net increase in CAD injury.)

The battle cry of the insurance industry has been "no crash - no cash," meaning that it will not officially recognize any low- or no-damage collisions as potentially injurious. (While it pretends not to understand the physics of crashes in low-speed cases, it does so in higher-speed crashes, when it favors them.) This simple example of dissimulation has been one of the most effective duplicities in the history of big business, playing on the inherent intuitive (but in this case, incorrect) logic of anyone who might make decisions in their favor: jurors, lawyers, arbitrators, judges, voters or even lawmakers. Meanwhile, the industry's experts-for-hire testify with impunity to whatever is needed to make the case, and many plaintiff attorneys who are not up to the task simply turn these plaintiffs away. Billions of dollars are at stake. In a world in which so many diverse interests are in play, equity and fairness are often the first casualties, and many injured parties often must pay for their own medical care. We sometimes forget that the system is supposed to work for "we, the people."

Despite this seemingly insurmountable conundrum, from my viewpoint, this epic worldwide imbroglio is actually (albeit gradually) resolving itself. For example, while we often vilify the insurers of the world, they have formed worldwide consortia to study this phenomenon of CAD. This requires some careful juggling of certain business strategies, but they manage it. Science and medicine (a term I use generically here) are continually improving our knowledge and understanding, and the purveyors of junk science are crowded onto an ever-shrinking landscape, marginalized by the very science they seek to pervert.

We have seen renewed interest in the development of a universally acceptable neck injury criterion (NIC), which will likely become part of federal regulations to ensure risk reduction in rear-impact collisions. A few European and Japanese manufacturers have been at the vanguard of safety in this area, with the development of anti-whiplash seats. Recall that in 1969, when head restraints first became mandated, car makers referred to them euphemistically as "head rests," loath to call attention to the fact that their products might be dangerous. Today's public is more safety-aware, and it is not uncommon for advertisements today to feature crash tests. The more safety "sells," the more safety will become job one. Convergence of priorities among the big players might not be "just on the horizon," but we are certainly on the right path.

I believe equilibrium in the courts will also be established as our knowledge and understanding of this complex phenomenon grows and - most importantly - as we, the *cognoscenti*, educate those who remain in

the dark. It is never enough to know the truth; we are obligated to spread the message. And this applies not only to those involved in insurance affairs, politics, or forensic medicine. Physicians are on the front line in this business. Their patients need reliable and well-informed advice concerning their choices in buying safe family cars, using safety equipment and booster seats, etc.

California has twice rejected ballot initiatives aimed at reducing auto insurers' liability in personal injury claims. Meanwhile, Colorado recently returned to a tort system after its experiment with no-fault, as did Saskatchewan. The people demanded change and they got it; democracy in action. And as for the experts-for-hire, some professional medical associations have adopted rules of conduct for their members that sanction them for offering expert testimony that is deliberately deceptive or disingenuous. I see that as a very important step, and one this profession should probably follow.

In my view, things are looking better than ever. I'm gratified to see the progress this profession has made in this area and the part it continues to play on both the research and the clinical management fronts. It is fundamental for us to remain focused on this problem and to establish a leading role in the research and management of CAD.

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