

Spinal cord injury research hampered by animal models, says new study

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Research on traumatic spinal cord injuries is hampered by a reliance on animal experiments that don't accurately predict human outcomes, says a new study in the upcoming edition of the peer-reviewed journal *Reviews in the Neurosciences*. The review was written by scientists with the Physicians Committee for Responsible Medicine.

“Despite decades of animal experiments, we still don't have a drug to cure spinal cord injury in humans,” says Aysha Akhtar, a neurologist with PCRM and the lead author. “According to the Journal of the American Paraplegic Society, at least 22 agents were found to improve spinal cord injury in animals, but not one of these was helpful in humans,” says Dr. Akhtar.

The paper outlines the numerous problems with translating animal data into effective human treatments, including the many variations between laboratory-induced injuries in animals and human injuries, the difficulties in interpreting functional outcomes in animals, and the multitude of inter-species differences in physiology and anatomy.

The extrapolation problem, in general, has been widely acknowledged by scientists of many disciplines and affiliations. According to data from the Food and Drug Administration, more than 90 percent of drugs that proved successful in animal tests are not approved for wider use after clinical trials in humans. In February, three U.S. government agencies, including the National Institutes of Health, the Environmental Protection Agency, and the National Toxicology Program announced a major new

program aimed at ending the use of animals in safety testing of new chemicals and drugs.

Because of the extrapolation challenge, some fields, such as cancer research and toxicity testing, are moving toward a greater use of alternatives. Unfortunately, spinal cord research, a relatively newer endeavor, is not yet learning from the failure of other fields of inquiry. As Dr. Akhtar warns, “We need to develop new, more effective research techniques.”

Although scientists have just begun to develop alternatives to the use of animals in spinal cord injury research, several techniques show great promise. Researchers at the University of Miami, for example, are collaborating on the Human Spinal Cord Injury Model Project which uses imaging techniques, post-mortem analysis, and nerve conduction methods to understand human spinal cords. Other promising directions involve computer modeling, studies on human nerve tissues, and the study of human cadavers.

At least 250,000 Americans are living with spinal cord injuries; an estimated 10,000 Americans are diagnosed each year.

Source: Physicians Committee for Responsible Medicine

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