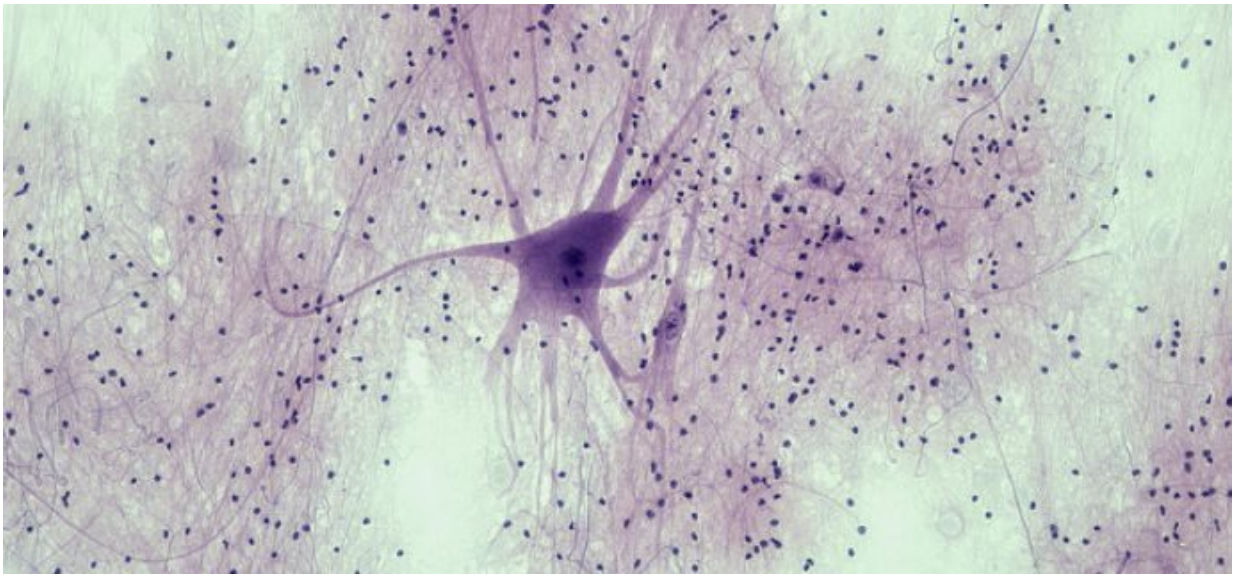
Military-related factors affecting survival of veterans with motor neuron disease

July 11 2018, by Beth Jones



Credit: PLOS Blogs

Military veterans may have higher rates of death from the progressive neurodegenerative disease amyotrophic lateral sclerosis (ALS), also known as motor neuron disease, than non-veterans. However, few studies have examined what might be behind this association. The authors of a *PLOS ONE* study evaluated the relationship between various military-related factors and ALS survival among U.S. veterans.

The study has just been awarded the 2018 PLOS Veterans Disability &

Rehabilitation Research Channel Prize. I interviewed via email co-author John Beard, epidemiologist and Assistant Professor in the Department of Public Health at Brigham Young University, to find out more.

What drew you to study epidemiology?

JB: It happened gradually over time. I've been interested in numbers and research since I was about 10 years old, so I majored in statistics for my undergraduate degree. I then earned graduate degrees in public health and epidemiology so that I could apply statistics to real problems that affected real people. I had some great mentors in graduate school and during internships who helped me to discover that epidemiology was enjoyable, fulfilling, and a good fit for me.

In your study, you examined rates of amyotrophic lateral sclerosis (ALS) mortality amongst US military veterans. Why did you decide to study this topic?

JB: About half of ALS patients die within 2-3 years of diagnosis, but about 4 percent survive more than 10 years. Aside from certain clinical characteristics, we don't really know why the survival of ALS patients is so variable. In addition, there is emerging evidence that the probability of developing ALS is higher among military veterans than non-veterans, but only four previous studies had considered whether military-related characteristics might be associated with survival after ALS diagnosis. We hoped that identifying subsets of military veterans who had worse survival after ALS diagnosis might help clinicians target treatments or interventions.

What did you find?

JB: We found that survival after ALS diagnosis was on average relatively

short among those veteran ALS patients who served in the military before 1950, were deployed to World War II, or mixed and applied burning agents. In contrast, veteran ALS patients who were exposed to paint, solvents, or petrochemical substances, local food not provided by the Armed Forces, or burning agents or Agent Orange in the field, survived on average longer than veteran ALS patients who were not exposed to these. It's important to point out that our study was the first to consider many of these military-related characteristics in association with survival after ALS diagnosis, so our results need to be confirmed by additional studies in other military and non-military populations.

What most interested you in your findings, and why?

JB: I was most interested in the findings that being deployed to World War II and having mixed and applied burning agents were associated with shorter survival of veteran ALS patients, because we found in another recent study that these same military characteristics were also associated with veterans having an increased probability of developing ALS in the first place. Thus, certain characteristics might lead both to developing ALS and to shorter survival after ALS diagnosis. Body mass index (BMI) may be a non-military example: there is emerging evidence that people with a lower BMI may be more likely to develop ALS than people with a higher BMI, and ALS patients with a lower BMI may also have shorter survival after diagnosis than ALS patients with a higher BMI.

What do you hope your research might lead to?

JB: I hope our research leads to more studies of associations between clinical or non-clinical characteristics and survival after ALS diagnosis. This could help to identify ALS patients who are more likely to have shorter survival, so they can receive treatments or interventions that

might lengthen their lives.

You have just been awarded the 2018 PLOS Veterans Disability & Rehabilitation Research Channel Prize for this work. How did you feel when you found out that you'd won?

JB: I was pleasantly surprised that our paper was nominated for the award and that it won. ALS is thankfully a rare disease and the ALS research and patient communities are relatively small, so I was pleased that people outside of those communities were interested in how military-related characteristics might be associated with survival after ALS diagnosis.

What do you plan to do with your $500 prize money?

JB: I'll share it with my co-authors, but we haven't yet discussed plans.

More information: John D. Beard et al. Military service, deployments, and exposures in relation to amyotrophic lateral sclerosis survival, *PLOS ONE* (2017). DOI: 10.1371/journal.pone.0185751 John D. Beard et al. Military service, deployments, and exposures in relation to amyotrophic lateral sclerosis survival, *PLOS ONE* (2017). DOI: 10.1371/journal.pone.0185751