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Funeral directors may be at heightened risk of progressive neurodegenerative disease

Link with amyotrophic lateral sclerosis (ALS) may be formaldehyde in embalming fluid

Funeral directors, who prepare bodies for burial, may be at heightened risk of the neurodegenerative disease amyotrophic lateral sclerosis, or ALS for short, as a result of the formaldehyde used in embalming fluid, suggests research published online in the ***Journal of Neurology Neurosurgery & Psychiatry***.

ALS, also known as Lou Gehrig's disease, was the subject of last year's ice bucket challenge. It is progressive, causing muscle weakness, paralysis, and eventually respiratory failure and death. There is no cure for the condition, which is thought to affect 450,000 people worldwide.

Some environmental factors have been mooted as possibly increasing the risk of developing ALS, including formaldehyde.

The researchers therefore looked at the links between death from ALS and occupational exposure to formaldehyde, using the US National Longitudinal Mortality Study (NLMS), involving almost 1.5 million adults.

When they were 25 or older, participants were asked about their current or most recent job. Their exposure to formaldehyde at work was estimated, using criteria developed by industrial hygienists at the National Cancer Institute.

The intensity (frequency and level) and probability (likelihood) of exposure to formaldehyde were calculated for each job and industry sector.

Men in jobs with a high probability of exposure to formaldehyde were around three times as likely to die of ALS as those who had not been exposed to this chemical at all.

But women with a high probability of exposure did not have an increased risk of ALS, possibly because too few had jobs that exposed them to high levels of formaldehyde, making it difficult to calculate risk level, say the researchers.

Men whose intensity and probability of exposure were rated as high were more than four times as likely to die of ALS as those with no exposure, although there were only two ALS deaths in this group.

All the 493 men with high intensity and probability of exposure to formaldehyde were funeral directors as were nearly all the women, none of whom died of ALS.

This gender discrepancy in death rates might be because women funeral directors in the US are more often involved in dealing with bereaved relatives than in embalming, which would limit their exposure to formaldehyde, suggest the researchers.

This is an observational study so no definitive conclusions can be drawn about cause and effect, and the authors caution that jobs involving a high level of exposure to formaldehyde are relatively rare, added to which funeral directors are exposed to other chemicals used in embalming as well as to bacteria, and prions.

But experimental research has linked formaldehyde to nerve damage, increased permeability of the energy powerhouses of cells—mitochondria—and harmful free radical production, all of which are implicated in ALS, they say.