Occupational Bladder Cancer: Is There a Link Between Occupation and Severity?

Posted On: 26/10/2020
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A peer-reviewed study published on 21 October 2020 by academics from the University of Sheffield suggests that workers exposed to diesel fumes or who undertake plumbing, gas fitting, ventilation and welding work may be more likely to suffer from high-grade and high-stage bladder cancers.

This finding, albeit from a small-scale study that requires validation, is of significance to occupational disease lawyers.

Occupational Bladder Cancer

Around 10% of bladder cancers arise following occupational exposure to carcinogens such as aromatic amines, polycyclic aromatic hydrocarbons and heavy metals. Whilst many such high-risk carcinogens have been identified, it is suspected that more are still in use. Moreover, there is generally a long latency period between exposure and the manifestation of cancer.

Bladder cancer arises in at least two distinct phenotypes – a term used to refer to the disease's observed properties such as morphology, development and behaviour. Low-grade tumours are characterised by few genetic alterations and indolent behaviour. By contrast, high-grade bladder cancer is an aggressive disease characterised by multiple mutations.

The Hypothesis

It was hypothesised by the academics behind the above paper that these phenotypes could reflect different carcinogenic exposures and occupational tasks.

Accordingly, study participants – patients with bladder cancer at the Royal Hallamshire Hospital in Sheffield – were given a structured questionnaire covering matters such as their employment, tasks, exposures, smoking, lifestyle and family history.

The Results

Statistical analysis of the data revealed the following points of note:

1. High-grade bladder cancer was more common than low-grade bladder cancer in workers from the steel, foundry, metal, engineering and transport industries.

2. Engineering and metal workers also had higher than expected risks of certain high-risk bladder cancers.

3. High-grade bladder cancer was more common than low-grade bladder cancer in workers exposed to crack detection dyes, chromium, coal/oil/gas by-products, diesel fumes, aircraft fuel and solvents.

4. Higher-stage bladder cancers were more frequent than expected in workers exposed to chromium, coal products and diesel fumes.

5. Cancers of higher than expected grades and stages were also associated with occupational tasks such as welding, the use of mineral oil lubricants, the use of protective resins and with tasks that included diesel contact.

The researchers drew number of key conclusions from their analysis. Two are of particular relevance to occupational disease lawyers.

First, the occupational classes, tasks and contacts captured by the study reflect local industrial patterns and may partly explain the high prevalence of – and mortality from – bladder cancer seen in Yorkshire. In particular, the data suggest that electrical workers have a high risk of developing aggressive bladder cancer due to tasks such as welding and soldering (fumes from these tasks contain lead oxide, colophony and heavy metals such as arsenic, cadmium, chromium and nickel).

Secondly, the data support the carcinogenicity of diesel fumes to the urothelium (consistently with previous studies) and suggest that contact with diesel fumes is associated with high-grade/high-stage bladder and higher risks of disease progression.

Significance and Limitations for Disease Lawyers

If right, these findings are of significance in that they suggest a link between certain occupational tasks and a more aggressive, or severe, form of bladder cancer.

It should be noted, however, that there are limitations to the study. The sample size was small, so the data should be viewed, in the researchers' words, as "*hypothesis-generating, rather than definitive*."

That said, research in the area of occupational bladder cancer is growing and should be kept under close review by disease lawyers on both sides of the litigation fence.