Lung Cancer Risk Among Firefighters

By: Addison Thompson

Introduction

- Firefighters have a higher risk of developing lung cancer due to exposure to carcinogenic materials.
- Common exposures include asbestos, benzene, and diesel exhaust.
- Many scientists have investigated the relationship between firefighters and the development of lung cancer.
- Therefore, continued research, early detection through proper imaging, and adherence to safety and prevention guidelines are crucial in helping to lower lung cancer rates and protect firefighters' long-term health.



Risk Factors

- Firefighters are repeatedly exposed to smoke and hazardous chemicals while working.
- Asbestos, benzene, and diesel exhaust are identified as carcinogenic exposures.
- Continual exposure to smoke and hazardous chemicals can damage lung cells, alter DNA, and gradually contribute to the development of malignant tumors.
- Diesel exhaust from firetrucks can enter living areas when engines are running.
- Not using proper PPE such as gear, hood, gloves, boots, helmets, and respiratory protection can increase exposure to toxins and cancer-causing agents.

Statistics

- Lung cancer is among the leading causes of death, with approximately 130,000 deaths in the United States in 2022.
- Among 30,000 firefighters (of approximately 1.2 million firefighters nationwide) reported a 9% increase in all-cancer diagnoses and a 14% increase in all cancer-related mortality relative to the general population.
- Mice without respiratory protection had 3,852 lung genes change, even though gas levels were within safety limits. Of these, 86 showed major changes, including increased cancer-related genes and decreased immune-related genes.
- Firefighters face a greater overall risk of both developing cancer and dying from it compared to the general population.

Signs/Symptoms

- Symptoms to be aware of include coughing, chest pain, and shortness of breath.
- Fireground overhaul can quietly alter lung genes and promote inflammation.
- Because of these symptoms, it is important for firefighters to get appropriate screening and follow important prevention strategies to decrease their risk for long-term effects.

Imaging/Treatment/ Preventions

- Firefighters should use full personal protective equipment (PPE), including a self-contained breathing apparatus (SCBA), to limit their exposure to toxins and cancer-causing agents.
- PPE should be cleaned after every use, as well as routine cleaning and inspections every couple of months.
- Proper training can encourage healthier lifestyles and greater use of cancer screening methods to help lower their overall risk of developing lung cancer.
- Radiologic technologists are essential in conducting these early-detection exams by performing a MRI, ultrasound, and by recommending getting a chest X-rays or CT every 5 years.
- Cancer screening and early detection in first responders may improve survival, provide more treatment options, and support a better quality of life.

Conclusion

- Firefighters face a higher risk of developing lung cancer due to their exposure to hazardous chemicals such as smoke, diesel exhaust, and other carcinogenic chemicals while on duty.
- Firefighters should follow the prevention and reduction strategies such as proper personal protective equipment, routine cleaning of gear, and updated safety training to encourage healthier lifestyles.
- It is important that firefighters go to yearly health exams and screenings with their primary physician to catch early detection problems to reduce long-term effects on their overall health.

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