

Clinical Pathology Abstracts

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Multiple myeloma and precursor disease in firefighters at World Trade Center disaster

Multiple myeloma, a clonal expansion of differentiated B cells (plasma cells), is one of the most common hematologic neoplasms impacting adults and is most often diagnosed among people ages 65 to 74 years. A large prospective cancer screening noted that multiple myeloma is preceded by monoclonal gammopathy of undetermined significance (MGUS) or light-chain MGUS, both of which can be detected in peripheral blood. Previous studies have reported an increased risk of multiple myeloma and its precursor conditions among people who are exposed to known and suspected carcinogens, including polychlorinated biphenyl (PCB), dioxins, polycyclic aromatic hydrocarbons (PAHs), and asbestos. The attacks on the World Trade Center on Sept. 11, 2001 created an unprecedented environmental exposure to aerosolized dust and gases that contained known carcinogens. Recent studies have suggested an early onset of multiple myeloma in first responders to the World Trade Center disaster. The authors conducted a study to define the age-specific prevalence of MGUS and light-chain MGUS in World Trade Center-exposed New York City male firefighters. They performed a case series of multiple myeloma in firefighters diagnosed between Sept. 11, 2001 and July 1, 2017 along with a seroprevalence study of MGUS in serum samples collected from the Fire Department of the City of New York (FDNY) between December 2013 and October 2015. The study participants included World Trade Center-exposed FDNY white male firefighters with a confirmed physician diagnosis of multiple myeloma (n=16) or older than 50 years and having serum samples available (n=781). The results showed that the median age at diagnosis was 57 years and the median time between September 11 and diagnosis was 12 years. Among the World Trade Center-exposed FDNY firefighters, the overall age-standardized MGUS rate was 7.63 per 100 people, which was 1.8-fold higher than the rate for a control population. The data also showed that the age-standardized prevalence rate for light-chain MGUS was more than three-fold higher than for the same control population, at 3.08 per 100 people versus 0.98 per 100 people, respectively. The authors concluded that the study showed that environmental exposure to the World Trade Center disaster site was associated with MGUS and light-chain MGUS and may be a risk factor for developing multiple myeloma, particularly the light-chain subtype, at an earlier age.

Landgren O, Zeig-Owens R, Giricz O, et al. Multiple myeloma and its precursor disease among firefighters exposed to the World Trade Center disaster [published online April 26, 2018]. *JAMA Oncol*. doi:10.1001/jamaoncol.2018.0509.

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Association between time to colonoscopy after a positive fecal test and colorectal cancer

Routine screening for colorectal cancer can reduce mortality by leading to the removal of precancerous polyps and treatment of early stage cancers. A common approach to early detection is fecal immunochemical test (FIT) screening, which is used worldwide because of its sensitivity and low cost. A positive FIT needs to be followed up with a complete colon examination, which is typically a colonoscopy. Time until follow-up after a positive stool test result varies markedly, and longer follow-up time may result in differences in cancer stage or survival. The authors conducted a study to test the hypothesis that longer time to colonoscopy after a positive FIT result is associated

with an increased risk of any colorectal cancer and advanced stage disease at diagnosis. They performed a retrospective study from 2010 through 2014 on 70,124 patients aged 50 to 70 years who were eligible for colorectal cancer screening and had a positive FIT result and follow-up colonoscopy. Of the 70,124 patients with positive FIT results, 2,191 were diagnosed with any colorectal cancer and 601 were diagnosed with advanced stage disease. Colonoscopy follow-up within eight to 30 days showed no significant differences with regard to risk of any colorectal cancer when compared with follow-up at two months, three months, four to six months, and seven to nine months. However, risks were significantly higher for examinations at 10 to 12 months for any colorectal cancer (odds ratio [OR], 1.48) and advanced stage disease (OR, 1.97). The authors concluded that among patients with positive FIT screening tests, follow-up after 10 months was associated with a higher risk of colorectal cancer and more advanced stage disease at the time of diagnosis. They suggested that this could imply that further progression of a lesion detected by FIT may occur as soon as six to 12 months after a positive screening result. Additional research is needed to assess whether the relationship is causal. The authors acknowledged limitations to the study, including the potential influence of unmeasured confounders and the observational design.

Corley DA, Jensen CD, Quinn VP, et al. Association between time to colonoscopy after a positive fecal test result and risk of colorectal cancer and cancer stage at diagnosis. *JAMA*. 2017;317(16):1631-1641.

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