CHAPTER 7

EFFECTS OF CLIMATE CHANGE ON THE HEMATOPOIETIC SYSTEM

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The World Health Organization describes climate change as the greatest health threat facing humanity in 2021 and emphasizes that it could undermine global health gains over the last half century (1). Greenhouse gases such as methane, carbon dioxide, and nitrogen oxide, which are released by burning fossil fuels, coal, oil, and gas used as energy sources, capture infrared radiation and trap sunlight, causing global warming. The industrial food industry, mining, and the destruction of forests that absorb carbon dioxide, both by human hands and due to excessive heat increase, are also responsible for global greenhouse gas emissions. Numerous studies emphasize that the frequency of temperature and weather events will increase in the future with climate change. There are few studies in the literature examining the effects of climate change on the hematopoietic system in humans.

Forest fires, which are exacerbated by hot weather and drought, increase particulate matter (PM) levels. Particulate matter, which has different sizes and chemical components, is classified as coarse (PM10; diameter range 2.5–10 μm), fine (PM2.5; size <2.5 μm), and ultrafine particle (UFP; size <100 nm) according to its size (2). While PM10 remains in the nasal cavities and upper respiratory tract, PM2.5 can reach the alveoli and then pass into the blood and interact with blood cells and plasma (3). It is reported that PM2.5 levels above 10 μg/m³ on average per year or 25 μg/m³ in 24 hours are harmful to health (4). In a systematic review, it was found that anemia deepens in proportion to the

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