

Editorial

Acute and Chronic Pulmonary Side Effects of Drugs in Humans

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Complications caused by the inhalation of microbial agents or their products, as well as inhaled toxic particles present in the space air of the surrounding environment lead to acute or chronic inflammation in the lung and other deep respiratory tissues. This can be the source of metastatic spread of inflammation in other organs. It becomes more dangerous, especially when these agents can disrupt the common regulatory defense system in the lungs. In the state of balance and health of the environment and avoiding exposure to hazardous inhalation agents, the respiratory system has the power to regulate inflammation.

It is also possible that exposure to some stimulating factors, especially inorganic compounds, in a place outside the respiratory system, will cause metastatic inflammation in the lung. Lungs are highly susceptible to inflammation. However, molecular insights into how external inflammation enhances metastatic outgrowth in the lungs remain lacking. Due to the massive, abundant, and extensive blood circulation in the lung tissue, we see the widespread and metastatic spread of tumors in the lung. Since the lungs are also susceptible to inflammation, the specific tissue microenvironments are also provided for the intense growth of the tumor. In these cases,

the cellular and molecular mechanisms of inflammation regulation are deactivated and the immune system goes into a state of inflammation.

In addition to these events, examples of lung inflammation reactions following drug administration, especially nanoparticles, can be observed. Complications of pneumonia are diffuse alveolar damage and interstitial pneumonitis or side effects caused by the use of drugs, while there is no sign of infection. For example, many systemic disorders caused by drugs, which affect the respiratory system, are associated with a high risk of damage to that organ. However, when drugs affect the respiratory system, the risk is much greater than in other systems. More than 100 drugs can affect the lungs. Adverse drug reactions include exacerbation of asthma, cough, interstitial pneumonia, and purulent effusion. Drugs that cause fatal pulmonary reactions include cardiovascular drugs, anti-hypertensive agents, cytotoxic drugs, and antimicrobial drugs. In these cases, the systemic and side effects of the drugs cause inflammation in the lung tissue and its components. Similar to such an event in experimental induction in laboratory animal models by toxic agents, we see the occurrence of acute and chronic inflammation in the respiratory system, especially the lungs. For example, by administering a mustard sulfur analog, such as

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2-chloroethyl ethyl sulfide (CEES), short-term but stable side effects that lead to fatal chronic conditions occur. In many experiences and reports, it has been proven that the path of this inflammation is caused by a multifactorial disorder in the regulation of immunity in the respiratory system and these symptoms are the same deadly events that occur in humans exposed to toxic gases or sulfur mustard. It is similar to the same phenomenon that occurs in humans due to the pulmonary side effects of some drugs. However, to avoid the environmental hazards of sulfur mustard in the laboratory, the researchers were careful to use its analog as an intraperitoneal injection. The above-mentioned model can be used for research related to acute and chronic pulmonary side effects of drugs in humans.