

Pathologic lesions of mouse tissues caused by instilled selenium.

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Background: Accidental inhalation of selenium (Se) is harmful to the respiratory system and possibly to other organs of the body. These accidents may harm smelter, refinery, and glass bangle industrial employees. The putative pathology of trachea, lungs, kidney and liver caused by Se has not been defined so far. **Objective:** We have performed experimental studies to investigate the cellular pathology of trachea, lungs, liver and kidneys after a single intratracheal instillation of two different doses of Se as dimethyl selenide (DMSe) (0.05 and 0.1 mg Se/kg BW) in CD-1 mice. **Methods:** The animals were sacrificed 1, 7, 14, and 28 days after either one of the two DMSe treatments; samples were stained and studied by light microscopy. **Results:** The tracheal epithelium showed loss of cilia and acute necrosis, followed by metaplastic transformation. The lungs presented oedema and diffuse alveolar damage. Acute tubular damage characterised by swelling and vacuolation of epithelial cells of proximal tubules of kidney was observed after treatment with the low dose of DMSe. These lesions were transient and recovery was seen between days 14 and 28. The low dose of DMSe also caused damage to centrolobular hepatocytes expressed by swollen and vacuolized liver cells. After the instillation of the higher dose of DMSe, the mice showed sustained liver and kidney focal necrosis. **Conclusion:** We conclude that (i) Se causes metaplasia of the tracheal epithelium, (ii) lungs are more severity altered by Se than the trachea since 4 weeks after Se treatment, the tracheal lining recovers from damage, whereas lung lesions were persistent, (iii) Se caused acute tubular injury of the kidney and damage to centrolobular liver cells, (iv) this pathology induced by Se is a dose-dependent phenomenon.

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