Anticancer drug vinblastine sulphate induces transient morphological changes on the olfactory mucosa of the rabbit.

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Source
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Abstract
Vinblastine sulphate (VBS) is an anticancer drug that acts by disrupting microtubule dynamics of highly mitotic tissue cells. The consequences of VBS on the olfactory mucosa (OM), a tissue with high mitotic numbers, are not clearly understood. We used qualitative and quantitative methods to determine the structural changes that may be produced on the rabbit OM by VBS. Following a single dose (0.31 mg/kg) of this drug, the structure of the mucosa was greatly altered on the first 3-5 days. The alteration was characterized by disarrangement of the normal layering of nuclei of the epithelia, degeneration of axonal bundles, occurrence of blood vessels within the bundles, localized death of cells of Bowman's glands and glandular degeneration. Surprisingly on or after day 7 and progressively to day 15 post-exposure, the OM was observed to regenerate and acquire normal morphology, and the vessels disappeared from the bundles. Relative to control values, bundle diameters, olfactory cell densities and cilia numbers decreased to as low as 53.1, 75.2 and 71.4%, respectively, on day 5. Volume density for the bundles, which was 28.6% in controls, decreased to a lowest value of 16.8% on day 5. In contrast, the volume density for the blood vessels was significantly lower in controls (19.9%) than in treated animals at day 2 (25.8%), day 3 (34.3%) and day 5 (31.5%). These findings suggest that the changes induced on the rabbit OM by VBS are transient and that regenerative recovery leads to the restoration of the normal structure of the mucosa.

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