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Title: Exposure to mild steel welding fume and susceptibility to pneumococcal infection in mice

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Body: Background: Epidemiological studies suggest that occupational exposure to welding fumes (WF) increases susceptibility to invasive pneumococcal pneumonia. Biological plausibility of this association has not been determined. We therefore aimed to assess whether WF increases vulnerability to pneumococcal pneumonia in an animal model. Methods: 6-8 week old female CD1 mice were intra-nasally inoculated with either 1×10^6 pneumococci or welding fume (400 μ g) + pneumococci using PBS as a vehicle (n=6). The mice were culled 24 hours post-treatment and colony forming units (CFU) from lung homogenate and bronchial lavage fluid (BALF) assessed to obtain target organ CFU. Data were compared using Mann-Whitney U tests. Results: Both lung and BALF CFU counts were increased in mice exposed to welding fume (Figure, *p<0.05). Conclusions: Exposure to welding fumes increases susceptibility to pneumococcal pneumonia. Further work is required to elucidate the molecular mechanisms.