Infection Rates of Electrical Leads Used for Percutaneous Neurostimulation of the Peripheral Nervous System
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Abstract

Background
Percutaneous neurostimulation of the peripheral nervous system involves the insertion of a wire “lead” through an introducing needle to target a nerve/plexus or a motor point within a muscle. Electrical current may then be passed from an external generator through the skin via the lead for various therapeutic goals, including providing analgesia. With extended use of percutaneous leads sometimes greater than a month, infection is a concern. It was hypothesized that the infection rate of leads with a coiled design is lower than for leads with a noncoiled cylindrical design.

Methods
The literature was retrospectively reviewed for clinical studies of percutaneous neurostimulation of the peripheral nervous system of greater than 2 days that included explicit information on adverse events. The primary endpoint was the number of infections per 1,000 indwelling days.

Results
Forty-three studies were identified that met inclusion criteria involving coiled (n = 21) and noncoiled (n = 25) leads (3 studies involved both). The risk of infection with noncoiled leads was estimated to be 25 times greater than with coiled leads (95% confidence interval [CI] 2–407, P = 0.006). The infection rates were estimated to be 0.03 (95% CI 0.01–0.13) infections per 1,000 indwelling days for coiled leads and 0.83 (95% CI 0.16–4.33) infections per 1,000 indwelling days for noncoiled leads (P = 0.006).

Conclusions
Percutaneous leads used for neurostimulation of the peripheral nervous system have a much lower risk of infection with a coiled design compared with noncoiled leads: approximately 1 infection for every 30,000 vs. 1,200 indwelling days, respectively.


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