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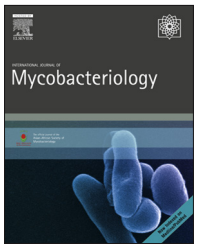

Effectiveness of a novel cellular therapy to treat multidrug-resistant tuberculosis

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ABSTRACT

Background/objective: We urgently need novel treatments for multidrug-resistant tuberculosis (MDR-TB). Autologous mesenchymal stromal cell (MSC) infusion is one such possibility due to its potential to repair damaged lung tissue and boost immune responses. We aimed to assess the safety and effectiveness of MSC to improve treatment outcomes among MDR-TB patients.
Methods: We analyzed treatment outcomes for 108 Belarusian MDR-TB patients receiving chemotherapy. Thirty-six patients (cases) also had MSCs collected, extracted, cultured, and reinfused (average time from chemotherapy start to infusion was 49 days) in optimal dose; another 36 patients (without MSC treatment) were "study controls". We identified another control group: 36 patients from the Belarusian national surveillance database (surveillance controls) 1:1 matched to cases.
Results: Successful outcomes were observed in 81% of cases, 42% of surveillance controls, and 39% of study controls. After adjusting for age, odds of a successful outcome were 6.5 (95% confidence interval, 1.2–36.2, $p = 0.032$) times greater for cases than surveillance controls. Adjusting for other potential confounders increased the effect estimate while maintaining statistical significance. Cases were less likely ($p = 0.01$) to be culture negative at 2 months than surveillance controls, indicating a poorer initial prognosis in cases before (or shortly after) infusion. Radiological improvement was more likely in cases than in study controls.
Conclusion: MSC treatment could vastly improve treatment outcomes for MDR-TB patients. Our findings could revolutionize therapy options and have strong implications for future directions of MDR-TB therapy research

Conflicts of interest

The authors have no conflicts of interest to declare.

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