

Terapi Sel Punca Pada Tata Laksana Chronic Limb Threatening Ischemia Yang Tidak Bisa Atau Gagal Dilakukan Revaskularisasi: Sebuah Scoping Review = Stem Cell Therapy in the Management of No-Option Chronic Limb-Threatening Ischemia: A Scoping Review

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Abstrak

Pendahuluan: Chronic limb-threatening ischemia (CLTI) terjadi pada pasien dengan nyeri saat istirahat akibat oklusi arteri. Sekitar 20% dikategorikan sebagai CLTI no option, yaitu keadaan tidak bisa atau gagal dilakukan revaskularisasi. Terapi sel punca menggunakan tipe mesenkimal (MSC) menawarkan pendekatan regeneratif terbaru melalui angiogenesis dan modulasi imun. Scoping review ini bertujuan mengeksplorasi bukti terapi sel punca terkini pada tata laksana CLTI no-option dan efektivitasnya. Metode: Scoping review ini dilakukan sesuai dengan panduan Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA ScR). Penelusuran artikel dilakukan secara sistematis di lima database: Cochrane (CENTRAL), Scopus, PubMed, EBSCOhost, dan ProQuest. Kriteria inklusi adalah studi RCT dan observasional yang meneliti terapi sel punca pada pasien CLTI no-option. Studi terpilih dinilai risiko bias dan level of evidence. Hasil: Dari 245 studi yang diskriming, terpilih 11 artikel yang memenuhi kriteria eligibilitas (10 RCT, 1 non-randomized study). Bone marrow (BM) MSC diinjeksi secara intramuskular, dan satu studi menggunakan rute intraarteri. Dosis bervariasi dari $5,04 \times 10^4$ hingga $5,61 \times 10^6$ sel, termasuk dosis berdasarkan berat badan. Pemantauan dilakukan 1–24 bulan. Seluruh studi tetap mengerjakan best supportive care. Perbaikan yang dilaporkan adalah nyeri saat istirahat (MD -0,23; -2,00), ankle-brachial index (MD 0,02; 0,20), tingkat amputasi (OR 0,13 – 0,85), dan penyembuhan ulkus (OR 1,52 – 7,78) disertai berkurangnya luas ulkus. Tidak ada mortalitas dan morbiditas yang dilaporkan. Kesimpulan: Sel punca mesenkimal memiliki potensi sebagai tata laksana regeneratif pada CLTI no-option, terlihat dari adanya berkurangnya nyeri dan perbaikan ABI. Namun, pengaruhnya terhadap tingkat amputasi dan penyembuhan ulkus masih belum konsisten. Tidak ada efek samping, morbiditas, atau mortalitas yang dilaporkan. Terbatasnya jumlah studi dan terkait heterogenitas, manfaat terapi sel punca belum dapat disimpulkan secara meyakinkan, sehingga masih membutuhkan studi lanjutan.

.....**Introduction:** Chronic limb-threatening ischemia (CLTI) affects patients with rest pain due to arterial occlusion. Around 20% are classified as no-option CLTI, being ineligible for or unresponsive to revascularization. Stem cell therapy, particularly using mesenchymal stem cells (MSCs), offers a novel regenerative approach through angiogenesis and immunomodulation. This scoping review explores current evidence on stem cell therapy for no-option CLTI and its effectiveness in promoting revascularization. **Methods:** This scoping review was conducted following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA ScR) guidelines. A systematic search was performed across five databases: Cochrane (CENTRAL), Scopus, PubMed, EBSCOhost, and ProQuest. Eligible studies included RCT and observational studies investigating stem cell therapy in patients with no-option CLTI. All selected studies were assessed using risk of bias tools and level of evidence criteria. **Results:** Of 245 studies screened, 11 met the eligibility criteria (10 RCTs, 1 non randomized study). Bone marrow (BM) MSCs were mainly delivered intramuscularly, with one study using an intra-

arterial route. Doses ranged from 5.04×10^6 to 5.61×10^6 cells, including weight-based regimens; follow-up lasted 1–24 months. All studies provided best supportive care. Most reported improvements in rest pain (MD –0.23 to 2.00), ankle-brachial index (MD 0.02 to 0.20), amputation rates (OR 0.13 to 0.85), and improved ulcer healing (OR 1.52 to 7.78) with ulcer area reduction. No studies reported mortality or morbidity outcomes. Conclusions: BM MSCs therapy shows potential as a regenerative treatment for non-healing CLTI, with consistent benefits observed in pain reduction and ABI improvement. However, its impact on amputation prevention and ulcer healing remains uncertain. No adverse events, including mortality or morbidity, were reported. Due to the limited number and heterogeneity of studies, current evidence is insufficient to draw definitive conclusions, underscoring the need for further robust clinical trials.