

EFFECTS OF INTRA-ARTICULAR BOTULINUM TOXIN INJECTION FOR THE MANAGEMENT OF OSTEOARTHRITIC KNEE PAIN - A LITERATURE REVIEW AND STATE OF THE ART

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Background and Aims

Knee osteoarthritis (KOA) is a progressive degenerative joint disease affecting over 30% of individuals above 65 years. It commonly presents with increasing pain, reduced knee mobility, and impaired quality of life. Although the mechanisms behind KOA pain are not fully understood, both peripheral and central sensitization are thought to play significant roles⁵. Persistent peripheral nociceptive input may maintain central sensitization, supporting the use of intra-articular (IA) injections to modulate this input. Since long-term non-steroidal anti-inflammatory drugs (NSAID) use is not advised⁸, alternative therapies are needed. This literature review aims to evaluate the efficacy and safety of intra-articular botulinum toxin injections in managing knee osteoarthritis pain.

Methods

A search of PubMed and Cochrane databases was performed using keywords and corresponding MeSH terms including "botulinum toxin", "injections", "intra-articular", "osteoarthritis", "knee", and "pain." The search focused on systematic reviews, meta-analyses, and randomized clinical trials from the past 20 years specifically addressing botulinum toxin for KOA-related pain.

Results

Seven studies were included: 3 randomized controlled trials and 4 systematic reviews with meta-analyses. Intra-articular botulinum toxin type A (single dose of 100-200 UI) appears to reduce pain in KOA, particularly in patients with central sensitization. Its mechanism may involve inhibition of the release of inflammatory mediators and neuropeptides from nociceptors, thus reducing neurogenic inflammation associated with osteoarthritis. However, current evidence does not show a clear advantage over other intra-articular treatments. While its high cost is a limitation, it is safe, causing no cartilage degeneration, metabolic disturbance, or bone ischemia, and can be used in joints with metallic implants.

Conclusion

Intra-articular botulinum toxin appears to be an effective and safe treatment option for nociceptive pain management in knee osteoarthritis. However further and stronger studies should be undertaken to determine the optimal dose and frequency of botulinum toxin administration.

Keywords: Botulinum Toxin, Intra-articular, Knee, Osteoarthritis