Efektivitas dan Keamanan Pemberian Magnesium Inhalasi sebagai Terapi Adjuvan pada Pasien Dewasa dengan Asma Eksaserbasi Akut: Sebuah Telaah Sistematis dan Meta Analisis = Effectiveness and Safety of Nebulized Magnesium as Adjuvant treatment in Adult with Acute Asthma Attack: Systematic Review and Meta Analysis

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Abstrak

Latar belakang: Asma merupakan penyakit ditandai peradangan saluran napas kronik. Satu dari tiga kasus tidak memberikan respon adekuat. Modalitas alternatif terapi asma adalah magnesium inhalasi. Inhalasi magnesium memiliki efek samping sistemik minimal. Oleh karena itu, peran magnesium inhalasi perlu diteliti lebih lan

Tujuan: Penelitian bertujuan untuk mengetahui efektivitas dan keamanan pemberian magnesium inhalasi pada pasien dewasa mengalami asma akut.

Metode: Penelusuran literatur dilakukan dua peneliti independen melalui: PubMed/ MEDLINE, Google Scholar, ProQuest, dan Cochrane dengan kata kunci “magnesium inhalasi” dan “serangan asma” dalam bahasa Inggris dan Indonesia. Pencarian manual dan snowballing dilakukan di portal data nasional. Studi yang dimasukkan adalah uji acak terkontrol mengenai perbandingan magnesium inhalasi dengan terapi standar pada serangan asma akut. Penilaian efektivitas berdasarkan parameter readmisi, tanda vital, perbaikan klinis, serta fungsi paru, sedangkan keamanan berdasarkan parameter efek samping. Protokol telaah sistematis didaftarkan pada PROSPERO.

Hasil: Lima artikel diikutsertakan dalam telaah sistematis. Dua artikel diikut-sertakan menilai aspek readmisi. Tiga studi menilai hubungan magnesium terhadap tanda vital pasien. Dua studi menilai tingkat keparahan penyakit dan perbaikan klinis. Studi menunjukkan tidak terdapat hubungan bermakna pemberian magnesium inhalasi pada aspek readmisi pasien (RR 1; IK 95% 0.92 - 1,08; p= 0,96), dan saturasi oksigen (MD 1,82; IK 95%: -0.89 - 4.53; p= 0.19). Ada penurunan bermakna laju napas pasien (MD -1,72; IK 95% -3,1 -0.35; p= 0.01), dan perbaikan gejala pada pasien (RR 0.29; IK95% 0.18 - 0.47; p <0.001). Ada peningkatan bermakna efek samping pasien magnesium inhalasi (HR 1.56; IK 95% 1.05 – 2.32; p= 0.32). Efek samping relatif ringan berupa hipotensi dan rasa mual.

Kesimpulan: Magnesium inhalasi memperbaiki klinis pasien asma terutama gejala, laju napas, dan fungsi paru. Magnesium inhalasi dikatakan aman jika diberikan pada pasien, namun hati-hati penggunaan pada pasien hipotensi.

.....Background: Asthma is a disease characterized by chronic airway inflammation. Asthma occurs to many people worldwide. One third of asthmatic case did not respond adequately to standard therapy (Short Acting Beta Agonist, Anticholinergic, Corticosteroid). One of alternative treatment of asthma is inhaled magnesium. Theoretically, inhaled magnesium is thought to have less systemic side effect and could act directly to respiratory tract. However, the role of inhaled magnesium therapy is not established yet.

Objective: This review is made to evaluate the effectiveness and safety of nebulized magnesium in adult with acute asthma attack.

Methods: Literature search was conducted by two independent investigators through online databases:

PubMed/MEDLINE, Cochrane, ProQuest, and Google scholar using the keywords “inhaled magnesium” and “asthma” in English and Indonesian. Manual searches and snowballing were carried out through national data portals and medical faculty e-libraries. Journal articles included in this study are randomized controlled trials that observed inhaled magnesium in adult with acute asthma attack. All the protocol of this systematic review has been registered in PROSPERO.
Result: There are five articles included in this review. Two of them evaluate the effect of magnesium in term of readmission, three of the studies measures effect of magnesium in vital sign, and two of them evaluate the effect of magnesium in term of severity of asthma There is no significant difference in readmission rate and oxygen saturation in magnesium group compared to control (RR 1; 95% CI 0.92 to 1,08; p= 0,96 and MD 1,82; 95% CI -0.89 to 4.53; p= 0.19, respectively). There is significant reduction of respiratory rate and clinical severity in magnesium (MD -1,72; 95% CI -3,1 to 0.35; p= 0.01, RR 0.29; 95% CI 0.18 to 0.47; p <0.001, respectively). There was a higher risk of side effect in magnesium group (HR 1.56; 95%CI 1.05 to 2.32; p= 0.03). However, the side effect is relatively mild such as hypotension and nausea.
Conclusion: Inhaled magnesium improves clinical outcome for patient with asthma attack especially lung function, improvement of clinical outcome, and lung function. Moreover, Inhaled magnesium is considered safe to be given to asthmatic patient. However, the inhaled magnesium is given with caution in patient with hypotension.