CME CATEGORY IIIA – SELF STUDY

A SELECTION OF TEN CURRENT READINGS ON BRONCHIAL ASTHMA AVAILABLE AS FULL-TEXT (SOME FREE SOME REQUIRING PAYMENT)

Selection of readings made by A/Prof Goh Lee Gan

RISK FACTORS

Reading 1

Wong GW, Ko FW, Hui DS, Fok TF, Carr D, von Mutius E, Zhong NS, Chen YZ, Lai CK. Factors associated with difference in prevalence of asthma in children from three cities in China: multicentre epidemiological survey. BMJ. 2004 Aug 28;329(7464):486.

URL: http://bmj.bmjjournals.com/cgi/content/full/329/7464/486 (full free text)

Department of Paediatrics, Chinese University of Hong Kong, Hong Kong Special Administrative Region, People's Republic of China.

ABSTRACT

OBJECTIVE: To determine the factors associated with difference in prevalence of asthma in children in different regions of China.

DESIGN: Multicentre epidemiological survey.

SETTING: Three cities in China.

PARTICIPANTS: 10,902 schoolchildren aged 10 years.

MAIN OUTCOME MEASURES: Asthma and atopic symptoms, atopic sensitisation, and early and current exposure to environmental factors.

RESULTS: Children from Hong Kong had a significantly higher prevalence of wheeze in the past year than those from Guangzhou and Beijing (odds ratio 1.64, 95% confidence interval 1.35 to 1.99). Factors during the first year of life and currently that were significantly associated with wheeze were cooking with gas (odds ratio 2.04, 1.34 to 3.13), foam pillows (2.58, 1.66 to 3.99), and damp housing (1.89, 1.26 to 2.83). Factors protecting against wheeze were cotton quilts and the consumption of fruit and raw vegetables.

CONCLUSION: Environmental factors and diet may explain the differences in prevalence of asthma between children living in different regions of China.

EVALUATION OF COUGH

Reading 2

Holmes RL, Fadden CT. Evaluation of the patient with chronic cough. Am Fam Physician. 2004 May 1;69(9):2159-66.

URL: http://www.aafp.org/afp/20040501/2159.pdf (free full text)

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ABSTRACT

Patients with chronic cough should avoid exposure to irritants that can trigger cough, and those who smoke should stop smoking. Patients who develop chronic cough in association with angiotensin-converting enzyme inhibitor therapy should be switched to an agent from another drug class. If cough persists, a chest radiograph should be ordered to rule out malignancy and other serious conditions. Postnasal drip syndrome, asthma, and gastroesophageal reflux disease are the most likely causes of chronic cough in adults. If postnasal drip syndrome is suspected, a trial of a decongestant and a first-generation antihistamine is warranted. Pulmonary function testing with a methacholine challenge is the preferred test for confirming the diagnosis of asthma. Gastroesophageal reflux disease usually is diagnosed based on the symptoms and after a trial of therapy. If the cause of chronic cough remains unclear, high-resolution computed tomographic scanning of the chest, bronchoscopy, and referral to a pulmonary specialist may be indicated. The approach to diagnosing chronic cough in immunocompromised patients and children is similar to the approach in immunocompetent adults. However, a CD4+ cell count can help determine the potential for opportunistic infections in immunocompromised patients. Respiratory tract infections, asthma, and gastroesophageal reflux disease are the most common causes of chronic cough in children. Foreign body aspiration should be considered in young children. Congenital conditions, cystic fibrosis, and immune disorders are possible diagnoses in children with chronic cough and recurrent infection.

Reading 3

Fardy HJ. A coughing child: could it be asthma? Aust Fam Physician. 2004 May;33(5):312-5.

URL: http://www.racgp.org.au/afp/downloads/pdf/may2004/20040510fardy.pdf (full free text)

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ABSTRACT

BACKGROUND: A child presenting with cough is common in general practice. Usually the cough is due to an upper respiratory tract infection, however, parents are often concerned that the cough may be asthma.

OBJECTIVE: This article focusses on identifying various causes of persistent cough, especially asthma.

DISCUSSION: Significant causes of an acute cough need to be considered such as inhaled foreign bodies, aspiration, infections such as pertussis and pneumonia, and asthma. Clinical history, followed by physical examination and consideration of special investigations will guide the diagnosis. Cough as the sole symptom of asthma is unusual. There is usually associated wheeze and shortness of breath. A family or personal history of atopic symptoms lend weight to the possibility of asthma. In children with asthma, physical examination and even spirometry may be normal between episodes. In some cases where asthma is suspected, a trial of bronchodilation with formal assessment of response may be appropriate.

DISTINGUISHING TYPES OF ASTHMA

Reading 4

Hermansen CL, Kirchner JT. Identifying exercise-induced bronchospasm. Treatment hinges on distinguishing it from chronic asthma. Postgrad Med. 2004 Jun;115(6):15-6, 21-5.

URL: http://www.postgradmed.com/issues/2004/06_04/hermansen.htm (full free text)

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SUMMARY

Exercise-induced bronchospasm (EIB) is an often-undiagnosed but common problem affecting both recreational and elite athletes. Although exercise can trigger exacerbation of chronic asthma, EIB should not be confused with the chronic inflammatory disease. The pathophysiologic features of chronic asthma are bronchoconstriction, mucus secretion, and inflammation. Abnormal interaction between TH2 lymphocytes seems to instigate the inflammatory pathway in chronic asthma. Similar effects have not been specifically demonstrated in EIB.

Reading 5

Lim KG. Mild persistent asthma. Traits, treatment set it apart from mild intermittent asthma. Postgrad Med. 2004 May;115(5):40-6.

URL: http://www.postgradmed.com/issues/2004/05_04/lim.htm (free full text)

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SUMMARY

The nature of respiratory complaints is the same in mild persistent and mild intermittent asthma (ie, wheeze, chest tightness, cough, and dyspnea). It is the frequency and intensity of these symptoms (dyspnea more than two times per week, nocturnal symptoms more than two times per month) that distinguish persistent asthma from intermittent asthma. The recommended pharmacologic therapy for mild intermittent asthma consists mainly of a bronchodilator taken as needed. Patients with mild intermittent asthma do not appear to benefit from the use of inhaled corticosteroids. However, since differentiation between the two conditions is not always possible, patients may benefit from an empirical trial of an inhaled corticosteroid. From recent studies, it is clear that patients with mild persistent asthma benefit from the early use of an inhaled corticosteroid as the initial controller medication. The body of literature that supports use of the rapid-onset, long-acting bronchodilator formoterol as an acute reliever is growing. Nedocromil and LRAs are less efficacious than inhaled corticosteroids when used as monotherapy in mild persistent asthma.

EVIDENCE-BASED MANAGEMENT

Reading 6

Kallstrom TJ. Evidence-based asthma management. Respir Care. 2004 Jul;49(7):783-92.

URL: http://www.rcjournal.com/contents/07.04/07.04.0783.pdf (free full text)

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ABSTRACT

In 2002 the National Asthma Education and Prevention Program published evidence-based guidelines for the diagnosis and management of asthma, but there are some unresolved asthma-management issues that need further research. For asthmatic children inhaled corticosteroids are more beneficial than as-needed use of beta(2) agonists, long-acting beta(2) agonists, theophylline, cromolyn sodium, nedocromil, or any combination of those. Leukotriene modifiers are an alternative but not a preferred treatment; they should be considered if the medication needs to be administered orally rather than via inhalation. Cromolyn sodium and nedocromil are effective long-term asthma-control medications, but they are not as effective as inhaled corticosteroids. There is insufficient evidence to determine whether cromolyn benefits maintenance of childhood asthma. Cromolyn sodium and nedocromil are alternatives, but not preferred treatments for mild persistent asthma. Cromolyn may be useful as a preventive therapy prior to exertion or unavoidable exposure to allergens. Regular inhalation of corticosteroids controls asthma significantly better than as-needed beta(2) agonists. No studies have examined the long-term impact of regular inhaled corticosteroids on lung function in children <or= 5 years old. As monotherapy, inhaled corticosteroids are more effective than long-acting beta(2) agonists. The asthma-control benefit of inhaled corticosteroids decidedly outweighs the risks from inhaled corticosteroids. There is no high-level evidence that low-to-medium-dose inhaled corticosteroids have ocular toxicity or important effects on hypothalamic-pituitary-adrenal function in children. Antibiotic therapy has no role in asthma management unless there is a bacterial comorbidity, but further research is needed on the relationship between sinusitis and asthma exacerbation. The asthma care plan should include a written asthma action plan for the patient, but there is inadequate evidence as to whether the asthma action plan should be based on symptoms or on peak flow monitoring. There is low-level evidence that helium-oxygen mixture (heliox) may be of benefit in the first hour of an acute asthma attack but less advantageous after that first hour. Metered-dose inhalers are no more or less effective, overall, than other aerosol-delivery devices for the delivery of beta(2) agonists or inhaled corticosteroids, so the least expensive delivery method should be chosen.

Reading 7

Sin DD, Man J, Sharpe H, Gan WQ, Man SF. Pharmacological management to reduce exacerbations in adults with asthma: a systematic review and meta-analysis. JAMA. 2004 Jul 21;292(3):367-76.

URL: http://jama.ama-assn.org.libproxy1.nus.edu.sg/cgi/reprint/292/3/367.pdf (payment required)

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ABSTRACT

CONTEXT: Over the last 2 decades, many new pharmacological agents have been introduced to reduce the growing morbidity associated with asthma, but the long-term effects of these agents on exacerbations are unclear.

OBJECTIVE: To systematically review and quantitatively synthesize the long-term effects of inhaled corticosteroids, long-acting beta2 agonists, leukotriene pathway modifiers/receptor antagonists, and anti-IgE therapies on clinical outcomes and particular clinically relevant exacerbations in adult patients with chronic asthma.

DATA SOURCES: MEDLINE, EMBASE, and Cochrane databases were searched to identify relevant randomized controlled trials and systematic reviews published from January 1, 1980, to April 30, 2004. We identified additional studies by searching bibliographies of retrieved articles and contacting experts in the field.

STUDY SELECTION AND DATA EXTRACTION: Included trials were double-blind, had follow-up periods of at least 3 months, and contained data on exacerbations and/or forced expiratory volume in 1 second. The effects of interventions were compared with placebo, short-acting beta2 agonists, or each other.

DATA SYNTHESIS: Inhaled corticosteroids were most effective, reducing exacerbations by nearly 55% compared with placebo or short-acting beta2 agonists (relative risk [RR], 0.46; 95% confidence interval [CI], 0.34-0.62; P<.001 for heterogeneity). Compared with placebo, the use of long-acting beta2 agonists was associated with 25% fewer exacerbations (RR, 0.75; 95% CI, 0.64-0.88; P =.43 for heterogeneity); when added to inhaled corticosteroids, there was a 26% reduction above that achieved by steroid monotherapy (RR, 0.74; 95% CI, 0.61-0.91; P =.07 for heterogeneity). Combination therapy was associated with fewer exacerbations than was increasing the dose of inhaled corticosteroids (RR, 0.86; 95% CI, 0.76-0.96; P =.65 for heterogeneity). Compared with placebo, leukotriene modifiers/receptor antagonists reduced exacerbations by 41% (RR, 0.59; 95% CI, 0.49-0.71; P =.44 for heterogeneity) but were less effective than inhaled corticosteroids (RR, 1.72; 95% CI, 1.28-2.31; P =.91 for heterogeneity). Use of monoclonal anti-IgE antibodies with concomitant inhaled corticosteroid therapy was associated with 45% fewer exacerbations (RR, 0.55; 95% CI, 0.45-0.66; P =.15 for heterogeneity).

CONCLUSIONS: Inhaled corticosteroids are the single most effective therapy for adult patients with asthma. However, for those unable or unwilling to take corticosteroids, the use of leukotriene modifiers/receptor agonists appears reasonable. Long-acting beta2 agonists may be added to corticosteroids for those who remain symptomatic despite low-dose steroid therapy. Anti-IgE therapy may be considered as adjunctive therapy for young adults with asthma who have clear evidence of allergies and elevated serum IgE levels.

Reading 8

Hsu JT, Parker S. Are inhalers with spacers better than nebulizers for children with asthma? J Fam Pract. 2004 Jan;53(1):55-7; discussion 57.

URL: http://www.jfponline.com/content/2004/01/jfp_0104_00055.asp (summary free)

University of Colorado Health Sciences Center, Denver, USA.

SUMMARY

A Cochrane review of 10 randomized controlled trials comparing nebulizers with MDI/S, both in adults and in children aged >2 years, showed a substantial trend towards improvement in hospital admission rates with MDI/S use. Sample size for each study was small, ranging from 18 to 152 patients, with a total sample size of 880 children and 444 adults.

The relative risk of admission for MDI/S vs nebulizer for children was 0.65 (95% confidence interval, 0.4–1.06). Secondary outcomes were equivalent or slightly improved, including duration in the emergency department, changes in respiratory rate, blood gases, pulse, tremor, symptoms score, lung function, and use of steroids. Patients with life-threatening asthma (for example, those considered for ventilation) or other chronic illnesses were excluded.

Reading 9

Palmer LJ, Valinsky L, Pikora T, Landau LI. Do regular check ups and preventive drug use reduce asthma severity in school children? Aust Fam Physician. 2004 Jul;33(7):573-6.

URL: http://www.racgp.org.au/afp/downloads/pdf/july2004/20040703landau.pdf (free full text)

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ABSTRACT

OBJECTIVE: To investigate whether regular check ups and preventive drug use reduce asthma symptoms in school children.

METHODS: Cross sectional retrospective questionnaire responses obtained from 2193 children aged 6-7 years in 34 primary schools, and 3650 children aged 13-14 years in nine secondary schools, selected at random by cluster sampling.

MAIN OUTCOME MEASURES: Asthma severity in the past 12 months as measured by the number of attacks of wheezing, visits to a doctor, visits to a hospital emergency department, and hospital admissions, all for wheezing or asthma.

ANALYSIS: Multivariate ordinal logistic regression.

RESULTS: Regular general practitioner check ups were associated with reduced asthma severity. Regular use of prophylactic and bronchodilator medications was associated with reduced symptoms. Asthma action plans and peak flow meter usage were associated with reduced hospital admissions.

DISCUSSION: If these associations are causal, then regular GP check ups are effective in reducing the health consequences of asthma in children.

ASTHMA IN PREGNANCY

Reading 10

Blaiss MS. Managing asthma during pregnancy. The whys and hows of aggressive control. Postgrad Med. 2004 May;115(5):55-8, 61-4.

URL: http://www.postgradmed.com/issues/2004/05_04/blaiss.htm (full free text)

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SUMMARY

Asthma occurs in about 4% of pregnancies and can worsen during pregnancy. Aggressive treatment is needed because failure to control asthma during pregnancy can lead to poor outcomes for both mother and child. Management of asthma during pregnancy does not differ greatly from treatment outside of pregnancy. The medical literature points out that the most commonly used controller therapies have a high benefit-to-risk ratio in pregnant patients. During this special time, frequent monitoring of the mother should help ensure a symptom-free pregnancy and a healthy, happy baby.