Trends in Cost and Outcomes among Adult and Pediatric Patients with Asthma: 2000-2009

Jang J. *et al.*

Annals of Allergy; Asthma; and Immunology 111 (6), 516-22 (Dec 2013)

Few studies have examined recent trends in medical expenditures and outcomes in patients with asthma.

Their objective was to examine the level and changes in medical expenditures, health status, and functional outcomes in adults, adolescents, and children with asthma and to provide nationally representative estimates of asthma medical costs from 2000 through 2009.

Medical Expenditure Panel Surveys from 2000 through 2009 were used to estimate the trends of medical expenditures (adjusted for medical price inflation), number of workdays lost or schooldays lost, and/or the physical component summary and the mental component summary from the revised 12-Item Short-Form Health Survey, adjusting for sociodemographic variables and comorbidities.

The averaged physical component summary decreased 0.09 units annually (95% confidence interval 0.02-0.16, P<.01) in adults, but there were no significant changes to the averaged mental component summary. There was no significant change in the number of workdays lost and a marginal decrease of 1.8% per annum in the number of schooldays lost (95% confidence interval -0.1 to 3.5, P = .06). The medical expenditure means increased 2.5% annually in adolescents (95% confidence interval 0.0-4.9, P = .049), but there were no significant changes for adults and children. The total incremental medical expenditures of asthma in the United States were estimated to be $62.8 billion in 2009.

This study found that, although medical costs for patients with asthma increased or remained stable across all age groups over a 10-year period, outcomes did not improve. Considering the economic burden of asthma and the previous 10-year performance, continued attention should be focused on asthma management in the United States.

Congenital Anomalies of Coronary Arteries in Children: The Evaluation of 22 Patients

Uysal F, Bostan O, Semizel E, *et al.*

Pediatric Cardiology (Dec 2013)

Although congenital coronary artery anomalies are seen in 0.6-1 % of adult patients undergoing coronary angiography, the data for the pediatric population are few. This study of 22 children with coronary artery anomalies evaluated them in terms of demographic and clinical features and analyzed their angiographic findings and surgical results. Databases in the Department of Pediatric Cardiology at the University of Uludag were searched for all the

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patients with a diagnosis of congenital coronary artery anomaly who underwent coronary angiography between 1993 and 2013. Patients with coexistent congenital heart disease were excluded from the study. The study noted 22 patients (0.9%; 10 boys and 11 girls) with coronary artery anomalies. The mean age of these patients was 58.77 ± 52.04 months (range, 1 month-16 years). Coronary arteriovenous fistula (50%) and anomalous left coronary artery from the pulmonary artery (ALCAPA) (36%) were the most common anomalies. In addition, the study included one patient with diffuse coronary artery hypoplasia, one patient with muscular bridge, and one patient with left main coronary artery originating from the right aortic sinus valsalva. Of the 11 patients who had coronary atrioventricular fistula, 7 were asymptomatic, whereas 75% of the patients with ALCAPA syndrome were admitted because of heart failure. Although 13 patients had an exact diagnosis by echocardiography, 50% of the patients with ALCAPA syndrome had their diagnosis determined by catheter angiography performed because of severe mitral regurgitation or dilated cardiomyopathy. The mortality rate for all the patients was found to be 18.1%. Eight patients with coronary arteriovenous fistula have been followed up without surgery to the present. In contrast, seven patients with ALCAPA syndrome have undergone surgery, and three have died. Two of these patients died during the postoperative period, and the remaining patient died suddenly during the preoperative period at home. Isolated congenital coronary artery anomalies are very rare in the pediatric population. Although most congenital coronary artery anomalies are clinically silent, they may be associated with severe symptoms in children. Recognition of potentially serious anomalies such as ALCAPA syndrome is mandatory so that early surgical treatment can be prescribed.

Effect of Pneumococcal Haemophilus Influenzae Protein D Conjugate Vaccine (Phid-Cv10) on Outpatient Antimicrobial Purchases: A Double-Blind, Cluster Randomised Phase 3-4 Trial

Palmu A. *et al.*

Lancet Infectious Diseases 14 (3), 205-12 (Mar 2014)

Antimicrobial drugs are frequently prescribed to children for respiratory tract infections such as otitis, tonsillitis, sinusitis, and pneumonia. We assessed the effect of the ten-valent pneumococcal Haemophilus influenzae protein D conjugate vaccine (PHiD-CV10; GlaxoSmithKline) on antimicrobial purchases.

In this nationwide phase 3-4 cluster-randomised, double-blind trial, children younger than 19 months were randomly assigned to receive PHiD-CV10 in 52 of 78 clusters or hepatitis B or A vaccine as control in 26 clusters according to three plus one or two plus one schedules (infants younger than 7 months) or catch-up schedules (children aged 7-18 months). The main objective for the antimicrobial treatment outcome was to assess vaccine effectiveness against outpatient prescriptions of antimicrobial drugs recommended by national treatment guidelines for acute otitis media in Finland in children who received at least one dose of study vaccine before 7 months of age. Masked follow-up lasted from the date of first vaccination (from Feb 18, 2009, through Oct 5, 2010) to Dec 31, 2011. We obtained data on all purchased antimicrobial prescriptions through the benefits register of the Social Insurance Institution of Finland.

More than 47 000 children were enrolled. In 30 527 infants younger than 7 months at enrolment, 98 436 outpatient antimicrobial purchases were reported with incidence of 169 per person-year in the control clusters. Analysis of the main objective included 91% of all antimicrobial purchases: 31 982 in the control and 57 964 in the PHiD-CV10 clusters. Vaccine effectiveness was 8% (95% CI 1-14) and the incidence rate difference 012 per person-year corresponding to the number needed to vaccinate of five (95% CI 3-67) to prevent one purchase during the 2 year follow-up for combined PHiD-CV10 three plus one and two plus one infant

schedules. The vaccine effectiveness was identical for the two infant schedules. In the catch-up schedules, the vaccine effectiveness was 3% (95% CI -4 to 10).

Despite low relative rate reductions the absolute rate reductions were substantial because of the high incidence of the outcome. This reduction would lead to over 12 000 fewer antimicrobial purchases per year in children younger than 24 months in Finland (birth cohort of 60 000 children).

Deep-Gray Nuclei Susceptibility-Weighted Imaging Filtered Phase Shift in Patients with Wilsons Disease

Bai X. *et al.*

Pediatric Research 75 (3), 436-42 (Mar 2014)

Susceptibility-weighted imaging (SWI) is a useful tool for evaluating brain paramagnetic mineralization. The aim of this study was to evaluate SWI filtered phase shift in brain gray nuclei of Wilsons disease (WD).

Twenty-three WD patients and 23 age- and gender-matched healthy controls underwent SWI. Phase values of bilateral brain gray nuclei were measured on corrected phase image of all subjects.

Compared with healthy controls, WD patients showed a trend of negative phase shift in all regions of interest, and significantly lower phase value was found in bilateral putamen (PU) (left P = 0.009, right P = 0.001), caudate (left P = 0.001, right P = 0.001), thalamus (TH) (left P<0.001, right P<0.001), red nucleus (left P = 0.031, right P = 0.049), and substantia nigra (left P = 0.003, right P = 0.047). The WD patients groups were divided into neurological, hepatic, and asymptomatic onset subgroups. And neurological onset patients had lower phase value than hepatic onset patients on bilateral PU (left P = 0.025, right P = 0.002) and TH (left P = 0.025, right P = 0.025).

Abnormal negative phase value was significantly increased in brain gray nuclei of WD patients, giving evidence in vivo about paramagnetic mineralization accumulating in brain gray nuclei. The phase shift of SWI could be used as a potential biomarker to help in diagnosing and evaluating WD.

Mitral Commissural Repair with Autologous Fresh Pericardium in An Infant

Takahashi H. *et al.*

Annals of Thoracic Surgery 97 (3), 1064-6 (Mar 2014)

We describe the successful mitral valve repair with autologous fresh pericardium in a 5-month-old infant with acute progressive mitral regurgitation. The intraoperative findings consisted of fragile mitral valve leaflets with multiple chordal rupture of both the anterior and posterior leaflets. The disrupted anterolateral commissure was reconstructed using autologous fresh pericardium, a technique not previously reported in an infant of this size. Follow-up echocardiography for up to 7 years showed only trivial mitral regurgitation and no mitral stenosis.

Assessing Asthma Severity Among Children and Adults with Current Asthma

Zahran H. *et al.*

Journal of Asthma (Feb 2014)

Asthma severity is a key indicator to assess asthma care and management. Severity status may vary over time. Assessing asthma severity periodically is important for monitoring the health and well-being of people with asthma.

To assess population-based asthma severity and to identify related-risk factors among children and adults with asthma. We used the 2006 to 2010 BRFSS child and adult Asthma Call-back Survey. Asthma severity was classified as intermittent or persistent. We performed multivariate logistic regression to identify related-risk factors.

Overall, 63.8% of persons with asthma had persistent asthma. Persistent asthma was more prevalent among children aged 0-4 years (71.8%; prevalence rate ratio [PR]=1.3). Among adults with current asthma, persistent asthma was more prevalent among those who were 45 years or older (aged 45-54: 69.4%; PR=1.1, aged 55-64: 72.6%; PR=1.2, and aged 65+: 77.8%; PR=1.3); annual household incomes of<$15,000 (74.1%; PR=1.1); and first diagnosed at age 55 years or older (first diagnosed at age 55-64: 80.4%; PR=1.1, at age 65+: 81.5%; PR=1.1). The prevalence of persistent asthma was also higher among current smokers who were also exposed to secondhand smoke (SHS) (74.7%; PR=1.1); and among those with Chronic Obstructive Pulmonary Disease (COPD) (77.1%; PR=1.2).

Nearly two-thirds of children and adults with asthma had persistent asthma. Identifying related-risk factors could help improve targeted interventions or strategies to reduce modifiable predictors (low income, smoking, and SHS) of increased asthma severity. Such strategies could improve asthma care and quality of life.

Multiple Aseptic Splenic Abscesses in A 15 Year-old Patient

Jordan A. *et al.*

BMC Gastroenterology 14 (1), 20 (2014)

Splenic abscesses in children are rare. In recent years aseptic abscesses have been recognized as a new disease entity, especially in adults.

We present a rare case of a 15 year old girl with aseptic abscesses, in whom antibiotic therapy comprising metronidazole and meropenem was partly beneficial in improving the patients clinical condition and inflammatory parameters. Eventually corticosteroid therapy led to complete and long lasting resolution of symptoms. Further diagnostic work-up revealed autoimmune thyroiditis, but no signs of inflammatory bowel disease.

Aseptic splenic abscesses should always prompt clinicians to initiate further diagnostics to determine a potential underlying condition and a regular follow-up. Anaerobic bacteria may play a role in the pathogenesis of the disease and besides corticosteroid treatment antibiotics covering anaerobes may be beneficial.

Does Hyperimmunoglobulin Prevent Congenital Cytomegalovirus Infection?

Revello MG. *et al.*

NEJM 2014; 370: 1316-1326

The efficacy of hyperimmunglobulin (HG) in prevention of congenital cytomegalovirus (CMV) infection was studied of total 124 pregnant women with primary CMV infection at 5 to 26 weeks of gestation, every 4 weeks until 36 weeks gestation or until 36 gestation of the infection of the amniotic fluid.

The primary end point was congenital infection diagnosed at birth or by means of amniocenthesis.

There was no significant difference between the women who transmitted the virus who did not, with respect to level of virus specific antibodies, T-cell-mediated immuneresponse or viral DNA in newborn blood. The clinical outcome of congenital CMV infection was similar in both groups. But, obstetrical adverse effects were higher in the HG group than the placebo group.

Sirolimus Therapy in Infants with Severe Hyperinsulinemic Hypoglycemia

Senniappan S. *et al.*

NEJM 2014; 370: 1131-1137

Sirolimus which is a mammalian target of rapamycin (mTOR) was used in 4 infants with severe hyperinsulinemic, could not be controlled by diazoxide (20 mg/kg) and octreotide (35 mg/kg). All 4 patients had a clear glycemic response, although one patient required a small dose of octreotide to maintain normoglycemia.

Mutant Adenosine Deaminase 2 in a Polyarteritis Nodosa Vasculopathy

Elkan PN. *et al.*

NEJM 2014; 370: 921-931

By exome sequencing multiple affected families with polyarteritis nodosa (PN), recessive mutation of CECR1, the gene encoding ADA2, was shown.

Zona Pelluide and Fertility

Huang HJ. *et al.*

NEJM 2014; 370:1220-1226

Human ova zona pelluida (ZP) is composed of 4 glycoproteins (ZP1, ZP2, ZP3, ZP4) has an important role in reproduction. The authors describe a form of infertility with an autosomal recessive mode of inheritance, characterized by abnormal eggs that lack of ZP. The authors detected frame shift rutation of ZP1 in 6 families. It prevents the formation of the ZP around the oocyte.