Single-Dose Oral Dexamethasone in the Emergency Management of Children With Exacerbations of Mild to Moderate Asthma

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Objective: To compare the efficacy of a single dose of oral dexamethasone (Dex) versus 5 days of twice-daily prednisolone (Pred) in the management of mild to moderate asthma exacerbations in children.

Study Design: A prospective, randomized, double-blinded trial of children 2 to 16 years of age who presented to the emergency department (ED) with acute mild to moderate asthma exacerbations. Subjects received single-dose oral Dex (0.6 mg/kg to a maximum of 18 mg) or oral Pred (1 mg/kg per dose to a maximum of 30 mg) twice daily for 5 days. After discharge, subjects were contacted by telephone at 48 h to assess symptoms and reevaluated in the ED in 5 days. The primary outcome was the number of days needed for Patient Self Assessment Score to return to baseline (score of 0–0.5).

Main Results: Baseline characteristics of the 2 groups were similar. The mean number of days needed for Patient Self Assessment Score to return to baseline (0–0.5) in the Dex and Pred groups were 5.21 versus 5.22 days, respectively (mean difference, −0.01; confidence interval, −0.70, 0.68). Pulmonary index scores were similar in both groups at initial presentation, initial ED discharge and at the day 5 follow-up visit. At the first visit, mean time to discharge was 3.5 h (±1.93) for Dex and 4.3 h (±3.67) for Pred (mean difference, −0.8; confidence interval, −1.8, 0.2). Initial admission rate was 9% (Dex) versus 13.4% (Pred). There was no significant difference in the number of salbutamol therapies needed in the ED nor at home after discharge. For subjects discharged home, the admission rate after initial discharge was 4.9% (Dex) versus 1.8% (Pred), resulting in overall hospital admission rates of 13.4% (Dex) and 14.9% (Pred).

Conclusion: A single dose of oral Dex (0.6 mg/kg) is no worse than 5 days of twice-daily prednisolone (1 mg/kg per dose) in the management of children with mild to moderate asthma.

Key Words: asthma management, glucocorticoids, prednisolone

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Children suffering from asthma symptoms present frequently to pediatric emergency departments (EDs).[1] It is well documented that oral steroid use is effective in alleviating the symptoms of acute asthma exacerbations.[2–7] In 1997, guidelines for the ED management of asthma exacerbations published by the National Institutes of Health (NIH) recommended the use of oral steroids for patients with mild asthma who were not immediately responsive to β_2 agonist therapy and for patients with moderate to severe disease.[8]

Orally administered prednisone or prednisolone (Pred) is often prescribed twice daily for 3 to 5 days for children with mild to moderate asthma.[8] Patient compliance may be a challenge in prolonged regimens of oral medications and may lead to inadequate administration, persistent signs and symptoms and, in some cases, hospitalization.[9,10]

A single intramuscular (IM) dose of dexamethasone (Dex) has been suggested as an attractive alternative by both Gries et al[11] and Klig et al.[12] They found single IM Dex to be as effective as 3 to 5 days of twice-daily prednisone. However, IM injections are painful, and thus, present a less desirable option than oral medication. Dexamethasone is well absorbed orally and has the same bioavailability as when given parenterally, with duration of action lasting up to 72 h after a single dose.[13] Qureshi et al[14] found that 2 doses of oral Dex provides similar efficacy with improved compliance and fewer side effects compared with 5 doses of oral prednisone in children with acute asthma.

The purpose of this study is to compare the efficacy of a single dose of oral Dex with 5 days of twice-daily Pred in the emergency management of mild to moderate asthma exacerbations in children. We hypothesized that single-dose Dex is no less effective than 5 days of twice-daily Pred when measuring the Patient Self Assessment Score (PSAS) or Peak Expiratory Flow Rate (PEFR) as markers of improvement in these children.

METHODS

Setting

This study was conducted at the British Columbia Children's Hospital, an urban tertiary level pediatric hospital which cares for patients from birth to 17 years of age. The ED

averages 34,000 patient visits annually and is the major emergency referral center for the province of British Columbia.

The study was approved by the Research Review Committee of the Children's and Women's Health Center of British Columbia and the Clinical Research Ethics Board of the University of British Columbia.

Study Population

Children 2 to 16 years old presenting to the ED with an acute exacerbation of mild to moderate asthma were eligible if they had a history of at least 1 prior episode suggestive of "asthma-like" acute shortness of breath or wheezing that was treated with salbutamol. Mild to moderate asthma exacerbation was defined as a Pulmonary Index Score (PIS) of less than 9 (Table 1) or a PEFR of 60% or more of predicted value for height.[15]

Exclusion criteria included the following: signs of severe asthma on presentation (PEFR less than 60%, PIS of 10 or more), complete recovery after the first salbutamol therapy, use of oral steroids over the last 2 weeks, history of severe asthma exacerbation, including prior intubation or intensive care unit admission for asthma, chronic lung disease, heart disease, neurological disorder, psychiatric disease, history of acute allergic reaction, active chickenpox, or herpes simplex infections.

Before the start of the study, seminars were conducted by the principal investigator to introduce all ED nurses and physicians to the study and provide training to standardize assessment using PIS and PEFR. These sessions included instruction on evaluation of proper PEFR technique.

Study Design

The study design is reviewed in Figure 1. All children presenting to the ED with mild to moderate asthma exacerbations were assessed by the emergency attending physician who decided if the child needed treatment with salbutamol. Before starting treatment, PIS, vital signs, and oxygen saturation were recorded. Peak expiratory flow rate was also recorded if the patient was 6 years or older.

Children with mild to moderate asthma exacerbation were given a first dose of salbutamol and were reassessed after 20 min by the ED attending. If further salbutamol was needed, the parents and the subject were invited to participate in the study, and the investigator on-call was called in to obtain informed consent, supervise the study treatment regimen, and perform hourly assessments until patient disposition was determined. Clinical data were recorded using a standard form. Investigators were on-call for the study from 6 A.M. to midnight 7 days a week.

Enrolled subjects automatically received the second and third salbutamol doses 20 min apart. The decision to give extra salbutamol after the third dose and the need for admission was left to the discretion of the ED attending physician. Subjects who declined participation were also treated according to the discretion of the ED attending. Although usually not necessary, 6 h was the maximum ED stay permissible. A standard salbutamol dose of 5 mg in 3 mL isotonic sodium chloride solution nebulized using a face mask and attached to oxygen source at 8 to 10 L/min was used consistently.

Consenting subjects were randomly assigned, using prepared sealed randomization cards, to receive either Dex (0.6 mg/kg to a maximum of 18 mg) or Pred (1 mg/kg to a maximum of 30 mg), given orally with the second salbutamol. The selected dose of Dex (0.6 mg/kg) was based on its use in previous group and asthma trials.[11,12,16–18] The pharmacy, without the involvement of any of the recruiting investigators, prepared both the sealed, computer-generated randomization cards and the study medications. The Dex formulation used was the standard intravenous solution, administered orally. The Pred solution was the standard oral liquid preparation. Both medications were blended with a bittersweet syrup solution to have the same taste, color, odor, and consistency. The placebo solution was a mixture of the same syrup and water combined to mimic the qualities of the medications.

Two study trays labeled A and B were kept in the ED. These contained large bottles labeled A1/A2 or B1/B2, respectively. These bottles contained either Dex (1) and placebo (2), or Pred (1 and 2). Investigators, nurses, and patients were blinded to the content of bottles A and B. The patient nurse selected a randomization envelope which contained instructions to administer either treatment regimen A or B. These lettering assignments were both investigator- and patient-blinded. The initial dose of 1 mL/kg of treatment A1 or B1 was prepared to be equal to 0.6 mg/kg of Dex or 1 mg/kg of Pred. The study medicine dose was repeated only

TABLE 1. Pulmonary Index Score

Score	Respiratory Rate (breath/min)*	Wheezing	Inspiratory to Expiratory Time	Accessory Muscle Use
0	<30	None	2:1	None
1	31–45	End of expiration	5:4	+
2	46–60	Entire expiration	1:1	++
3	>60	On inspiration and expiration audible without a stethoscope	1:>1	+++

*For patients aged 6 years or older: <20 = 0; 21–35 = 1; 36–50 = 2; >50 = 3.
Adapted with permission from *Am J Dis Child* 1984;138:574–576.[15]

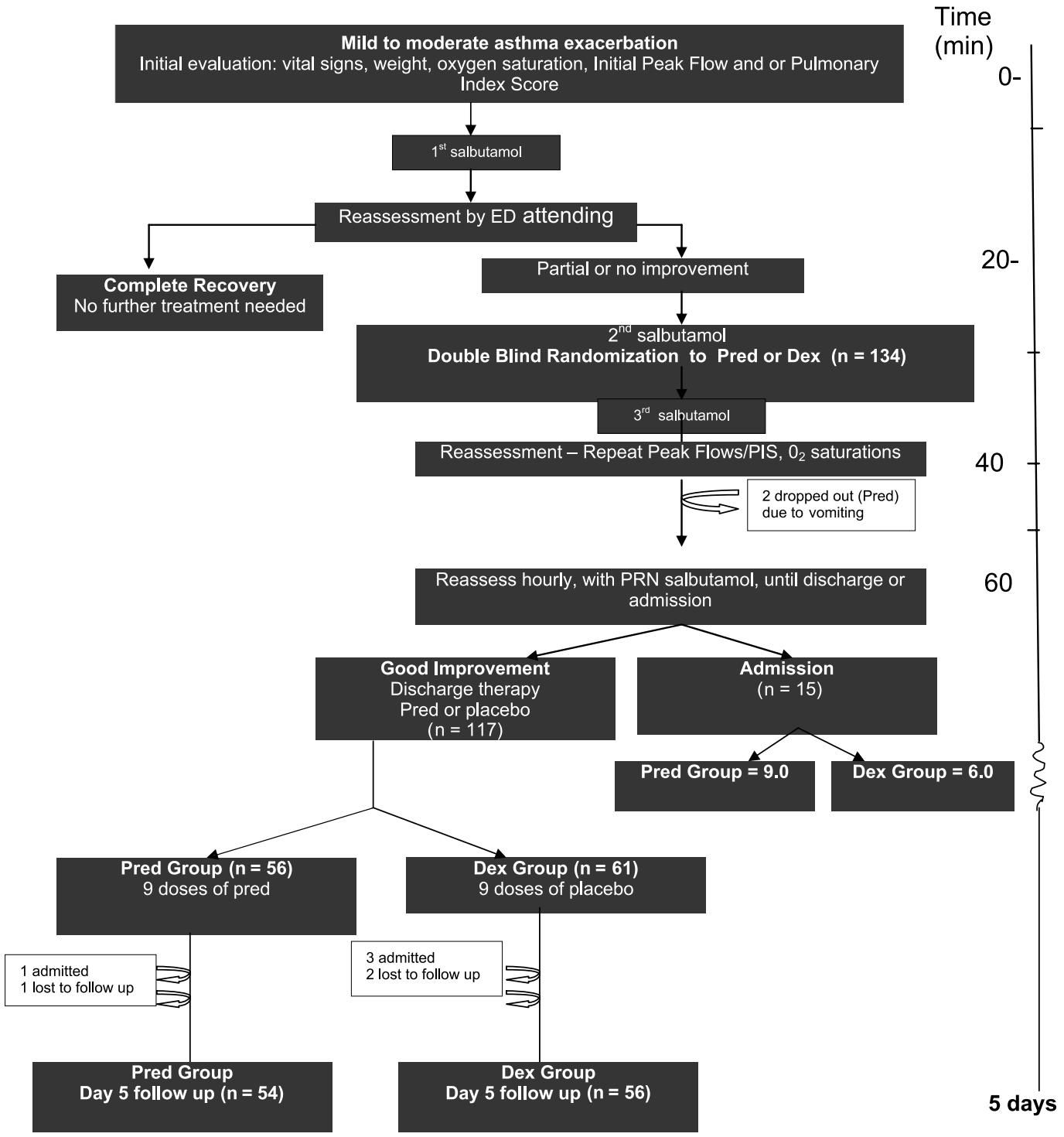

FIGURE 1. Study design.

once if the subject vomited within 20 min. Subjects with repeated vomiting were followed unless the parents or subjects decided to withdraw.

At discharge, subjects were given treatment A2 or B2 (1 mL/kg per dose to a maximum of 30 mL) to take twice daily for 5 days. These 2 take-home regimens correspond to placebo or 1 mg/kg per dose of Pred. The patients were instructed to continue inhaled salbutamol every 6 h for 48 h then as needed. In addition, they were asked not to take any inhaled steroid.

Parents or subjects were instructed to complete a modified PSAS sheet twice daily adapted from the *National*

TABLE 2. Patient Self-Assessment Sheet

Wheeze	0 = None	1 = Some	2 = Medium	3 = Severe
Cough	0 = None; 0.5 = Very occasionally*	1 = Occasional	2 = Frequent	3 = Severe
Activity	0 = Normal	1 = Can run only short distances or climb 3 flights of stairs	2 = Can walk but cannot run	3 = Missed school or stayed indoors
Sleep	0 = Normal	1 = Slept well with slight wheeze	2 = Awake 2 to 3 times at night with cough or wheeze	3 = Bad night, awake most of the time

*Less than 8 coughs in daytime or less than 1 cough/2 h at night.
Adapted with permission from *J Allergy Clin Immunol* 2002;110:S141–218.[19]

Institutes of Health Guidelines (Table 2).[19] This form was reviewed in detail with the parents, and any questions or concerns were addressed before discharge from the ED. All subjects were contacted by telephone 48 h after discharge to assess progress using a standard assessment form and to inquire about any side effects. Subjects were provided with a 24-h emergency contact number.

Reassessment by one of the investigators was undertaken in the ED on day 5. This included inquiring about the number of salbutamol treatments needed, side effects, unscheduled ED or family doctor visits because worsening symptoms, and review of the PSAS sheet. A repeat physical examination was performed, including oxygen saturation, vital signs, PIS, PEFR, and evaluation of patient compliance, by quantifying the volume of medicine remaining in the dispensing bottle. Compliance was considered acceptable if the child received at least 80% of the study drug. Subjects were discharged from the study on day 5 if they looked well and the end point was reached: PSAS returned to baseline (0–0.5) or PEFR was greater than or equal to 80% of predicted value. If subjects showed partial recovery, they were instructed to continue salbutamol treatment as needed, and weekly telephone follow-up was maintained until end point was reached, to a maximum duration of 3 weeks. Parents were asked to rank their child's status on a 4-point ordinal scale and to comment on whether or not they were satisfied with their child's management.

The primary outcomes were the number of days needed for PSAS to return to baseline (score of 0–0.5) or PEFR to return to 80% of predicted value for height. The decision to combine the 2 outcomes was made a priori because, although it was felt that the PEFR might be a more objective measure, it was recognized that many children cannot perform a PEFR properly especially if tested when acutely ill in the ED.[20] The PEFR measure was deemed to be unreliable if both the bedside nurse and study investigator felt the patient's technique in performing the maneuver was inadequate. The PSAS was selected as a means of monitoring ongoing symptoms after discharge because it had been endorsed by a panel of experts at the NIH, and a similar modification of the same scoring system had been used by Qureshi et al in their study.[14,19] A PSAS baseline of 0–0.5 seemed a realistic end point to the

TABLE 3. Demographic Data and Baseline Comparisons

	DEX (n = 67)	**PRED 9 (n = 67)**
Sex	N (%)	N (%)
Male (%)	43 (64)	43 (64)
Female (%)	24 (36)	24 (36)
Ethnicity		
Asian (%)	15 (22)	14 (21)
Black (%)	5 (8)	2 (3)
Caucasian (%)	23 (34)	27 (40)
East Indian (%)	14 (21)	12 (18)
Others (%)	10 (15)	12 (18)
Median age (mo)	60.0	48.5
Mean age at first diagnosis (mo)	26 (20.8)	28 (25.1)
Mean no. previous hospital admissions	0.3 (0.69)	0.4 (0.78)
Mean no. emergency visits in the last 12 months	1.6 (1.67)	1.7 (1.25)
Smokers at home (%)	11 (16%)	10 (15%)
Pulmonary index score	6.0 (1.74)	5.7 (1.97)
Mean PEFR at presentation (n = 14)	190.6 (n = 9)	162.3 (n = 5)

Standard deviation (SD) in parenthesis unless otherwise stated.

TABLE 4. Initial ED Visit Results

	DEX (n = 67)	PRED (n = 67)	Mean Difference (CI)
Mean length of stay in the ED in hours (SD)	3.5 (1.93)	4.3 (3.67)	−0.8 (−1.8, 0.2)
Mean pulmonary index score at discharge	1.3 (1.32)	(1.34)	0.1 (−0.36, 0.56)
Mean PEFR at discharge (n = 14)	275.0 (70.04)	241.0 (86.18)	34 (7, 61)
Initial rate of admission (%)	6 (9%)	9 (13.4%)	—
Mean length of inpatient stay (d)	1.8 (1.39)	1.7 (2.36)	0.1 (−0.56, 0.76)
No. intensive care admissions (%)	0	0	—
No. intubations (%)	0	0	—
Total no. inhaled ventolin therapy given in the ED	3.9 (1.44)	3.9 (1.53)	0 (−0.51, 0.51)

Standard deviation (SD) in parenthesis unless otherwise stated.

investigators because asthmatic children tend to have very occasional cough for many days after resolution of other more significant symptoms.

Secondary outcomes included short-term improvement in PEFR and PIS at time of discharge from the ED, actual time to discharge, number of salbutamol therapies needed in ED, initial admission rate, number of salbutamol therapies given at home, return to ED with worsening symptoms (shortness of breath, wheezing, or cough), need for admission after initial discharge, and improvement in PIS on day 5.

Statistical Analysis

Noninferiority was accepted if the new regimen (single-dose oral Dex) was no worse than 1 extra day in producing the primary outcomes of number of days needed for PSAS to return to baseline (score of 0–0.5) or PEFR to return to 80% of predicted value for height. Assuming a standard deviation of 2 days, and using an alpha of 0.1 and power of 95%, the sample size required was 67 in each group, for a total of 134 subjects. Because we have chosen to report a noninferiority study, we must guard against a type II error and have therefore chosen a very small beta of 0.05.

Statistical tests used for comparison are the log-rank test and confidence intervals. The time for PSAS to return to baseline is represented in a Kaplan Meier plot.

RESULTS

Over the study period of 18 months (November 2001–April 2003), there were 1471 visits to the ED with the discharge diagnosis of asthma. These included 1219 visits from 0600 to 2359 h. A patient may have visited the ED more than once. One hundred thirty-four eligible subjects (67 subjects in each group) consented to study participation and were enrolled. Unfortunately, at the time our study was conducted, a nurse-initiated guideline for the management of asthma in children had just been implemented. As a result, a number of patients who might otherwise have been eligible for our study were deemed ineligible because they quickly received β_2 agonist therapy and an initial dose of oral steroid before their identification as eligible candidates for our study.

TABLE 5. Day 5 Follow-up Results

	DEX (n = 56)	PRED (n = 54)	Mean Difference (CI)
No. subjects with unscheduled returns to the ED (n = 61 Dex; n = 56 Pred)	4 (6.56%)	1 (1.79%)	—
No. admissions after initial discharge	3 (4.92%)	1 (1.79%)	—
Total number hospital admissions (n = 67, both groups)	9 (13.4%)	10 (14.9%)	—
Side effects			
Abdominal pain	2	3	—
Vomiting	0	1	—
Headache	0	0	—
Palpitation	0	0	—
Excessive urination	0	1	—
No. parents satisfied with management (percentage)	53.0 (94.6%)	51.0 (94.4%)	—
Mean pulmonary index score	0.4 (0.8)	0.3 (1.06)	0.1 (−0.25, 0.45)
Mean no. days for PEFR to return to >80% predicted (n = 14)	4.8	3.8	—
Mean no. days for the PSAS to return to 0–0.5	5.21 (1.94) Median = 5.00	5.22 (1.71) Median = 5.00	0.01 (−0.70, 0.68)

Standard deviation (SD) in parenthesis unless otherwise stated.

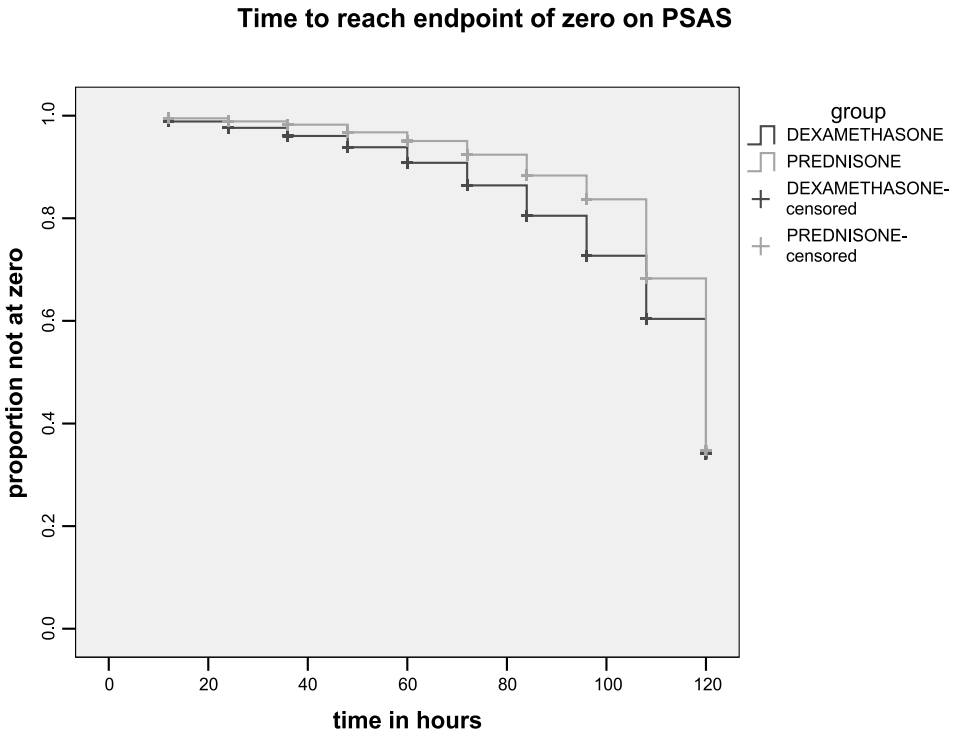

FIGURE 2. Log-rank test for differences between groups: $P = 0.014$.

One hundred ten subjects completed the study (56 in the Dex group and 54 in the Pred group). Two subjects participated twice. Both groups were similar in their baseline assessment and initial asthma severity, with comparative PIS scores of 6.0 (Dex) versus 5.7 (Pred) (Table 3). Although all 42 subjects older than 6 years had PEFR testing, only 14 (33%) had a reliable peak flow performance, 9 in the Dex group and 5 in the Pred group. As a result, it was not possible to include PEFR as a reliable outcome variable in our final analysis. The PIS and PSAS were used for all patients in the final outcome analysis.

Results from the initial ED visit are presented in Table 4. The Dex group had a slightly shorter stay in the ED on the first visit, 3.5 (±1.93) versus 4.3 h (±3.67) [mean difference, −0.8; confidence interval (CI), −1.8, 0.2]. Both groups required a mean of 3.9 salbutamol treatments (mean difference, 0; CI, −0.51, 0.51). There was no difference in severity of asthma at initial ED discharge, PIS 1.3 (Dex) versus 1.2 (Pred) (mean difference, 0.1; CI, −0.36, 0.56), nor in the number of initial hospital admissions, 6 (9%) versus 9 (13.4%), respectively. Two subjects in the Pred group dropped out because of repeated vomiting.

In the Dex group, 4 subjects (6.56%) returned with persistent symptoms requiring salbutamol therapy. Three were subsequently admitted to hospital. In the Pred group, only 1 subject returned to the ED with persistent symptoms requiring salbutamol therapy. This patient was eventually admitted to hospital. The mean length of in-patient stay was 1.8 (±1.39) versus 1.7 (±2.36) days. No patients required intensive care.

At the 5-day follow-up (Table 5), PIS scores had improved further to 0.4 (Dex) and 0.3 (Pred) (mean difference, 0.1; CI, −0.25, 0.45), and no difference was found in the number of salbutamol treatments needed.

Compliance with medication administration was very good for both groups. Only 1 patient in the Pred group and 5 patients in the Dex group received less than 80% of the prescribed study drugs. The Dex group would have, of course, missed only placebo. Both Dex and Pred were well tolerated (Table 5).

The mean number of days needed for PSAS to return to baseline was 5.21 (Dex) versus 5.22 (Pred) days (mean difference, −0.01; CI, −0.7, 0.68). The survival curves depicting improvements in PSAS are represented in Figure 2. Although the log-rank test seems to show a difference favoring Dex, the study was designed as a noninferiority study. Thus, based upon our hypothesis, we can conclude only that treatment with Dex seems to be no worse than treatment with Pred. The mean number of days for the PEFR to return to more than 80% predicted was 4.8 days in the Dex group and 3.8 days in the Pred group. As mentioned previously, these data were based on information from only 14 patients, so further reliable statistical comparison is not possible. The numbers of admissions in both groups are similar with 9 (13.4%) admissions in the Dex group and 10 (14.9%) in the Pred group.

Finally, the number of patients with ongoing symptoms after 5 days was also similar in both groups. Sixteen patients in the Dex group and 13 patients in the Pred group had persistent symptoms and were followed to day 7. At 10 days, this number had decreased to 2 and 1 patients, respectively.

DISCUSSION

We conducted this prospective randomized study to evaluate the efficacy of single-dose oral Dex versus 5 days of Pred in the treatment of children with acute exacerbations of mild to moderate asthma. We found that a single dose of oral Dex (0.6 mg/kg) was no less effective than 5 days of twice-daily Pred (1 mg/kg per dose). There was no difference between groups with respect to return to baseline PSAS, admission rates, PIS during treatment, or number of salbutamol treatments required.

Our findings are similar to those of Qureshi et al,[14] who, in an unblinded study, compared the use of 2 consecutive daily doses of oral Dex (0.6 mg/kg per dose) with 5 consecutive daily doses of oral prednisone. They found that the 2-day Dex regimen provided similar efficacy with improved compliance. Initial hospitalization rates from the ED (11% for Dex and 12% for Pred) were similar to those found in our study, with our initial hospitalization rates of 9% (Dex) and 13.4% (Pred). In the study of Qureshi et al,[14] relapse rates (7.4% for Dex and 6.9% for Pred) were similar to those of our Dex patients (6.56%) but somewhat higher than those observed for our Pred patients (1.79%). In our study, 3 subjects returned to the ED requiring admission in the Dex group as compared with only 1 later admission in the Pred group. Although these relapse rates were not significantly different, the trend is potentially concerning. Further investigation is necessary to determine if the duration of clinical benefits from Dex is adequate during acute asthma exacerbations.

We chose a maximum allowable stay in the ED of 6 h because at the time of our study, this was the maximum time any patient can stay in the ED before a decision to admit the patient to hospital or not is reached. Most of our patients were discharged well before this limit, with our mean lengths of stay being 3.5 (Dex) and 4.3 h (Pred). We recognize that in most cases, a decision regarding patient disposition is made well before our 6-h limit, and that this would be an unreasonably long management period for many busy EDs. The shorter ED stay in the Dex group at the first visit can be a reflection of the Dex group being 11.5 months older than the Pred group and physicians having different thresholds to discharge older patients. However, it is notable that asthma symptom severity as measured by the PIS at discharge was similar in both groups.

One goal of our study, if noninferiority was shown, was to simplify the treatment protocol for acute asthma exacerbations, thus minimizing impact on patients and families. Numerous factors, including taste, frequency of dosing, and length of treatment course, may contribute to noncompliance with prescribed medical treatment regimens.[9,10] The pharmacological properties of Dex are well known, with its main advantages being good oral bioavailability, a relatively long biologic half-life, and considerable duration of action.[13] In addition, the relatively tasteless quality of the parenteral formulation when given orally should contribute to improved patient satisfaction and compliance. Indeed, the standard regimen at our institution during the time of this study period was a 5-day course of oral Dex (intravenous formulation) instead of prednisone or Pred. This had evolved due to the unpalatable nature of the other oral steroid preparations. In 2000, Gries et al[11] compared a single dose of IM Dex to a 5-day course of oral prednisone in the treatment of mild to moderate asthma exacerbations in young children aged 6 months to 7 years. They showed that clinical asthma scores improved significantly in both groups, and no significant difference was seen in the rate of improvement between the 2 groups over the course of the 7-day study period. Our study builds on these findings, with the additional benefit of avoiding painful IM injections.

Overall, both groups showed similar recovery on day 5 assessment with a high rate of parent satisfaction. Both regimens were well tolerated with no significant side effects. Both groups required an equal number of salbutamol treatments, and PIS, both at discharge from the ED and at 5-day follow-up, were similar.

At the day 5 follow-up visit, a number of patients in both groups had not yet reached the study end point with return of PSAS to baseline, and as such, continued follow-up was arranged. Although the difference between the 16 patients in the Dex group and the 13 patients in the Pred group who had persistence of symptoms past day 5 was not statistically significant, the persistence of symptoms is of concern and warrants further evaluation. This suggests that outpatient follow-up of all patients with acute exacerbation of asthma may be wise.

Limitations

Our findings warrant some caution in interpretation because of a few limitations. Firstly, our primary outcome measure is a clinical scoring system that relies on parental interpretation of patient symptoms. Gries et al[11] used a clinical asthma score in which only cough and wheeze symptoms were followed by parents. We feel that the PSAS, endorsed by a panel of experts from the NIH, may provide a better assessment of disease severity because it incorporates respiratory symptoms and other clinical information.[8,19] Other investigators have also used a modified version of the same NIH PSAS.[14] Our modification includes a score of 0.5 for the symptom of very occasional cough (less than 8 coughs during the day or less than 1 cough every 2 h during the night). We felt this was a more realistic baseline measure for children with asthma who were recovering from an acute exacerbation with more significant symptoms. Although it is possible this modification may render the PSAS less sensitive, we do not feel that this represents a major limitation. It is noteworthy that at day 5, both the PSAS, measured by the parents, and the PIS, measured by the investigators, showed improvement for the 2 groups of patients.

Although the National Guidelines suggest measurement of PEFR as a more valid and reproducible measure of airway obstruction than clinical examination, we were unable to use PEFR as an objective primary outcome measure because only 42 of our study patients were older than 6 years, and a substantial proportion (67%) were not able to reliably perform the test. This is not an unusual experience in most pediatric EDs. In a study of children 6 to

18 years old, Gorelick et al[20] found that of those in whom PEFR was attempted at least once, only 65% were able to perform adequately. Furthermore, only 48% of their patients were able to provide valid measures both at the start and at the end of ED treatment.

In the United States, the highest rate of ED visits for asthma is among the 0- to 4-year age group, and as such, it is important to include this group in any study addressing the ED management of acute asthma exacerbations.[1] With the inclusion of younger children, we had legitimate concerns that patients with bronchiolitis may inadvertently enter our data pool. Because these children are unlikely to respond to steroid therapy, they might potentially bias the results toward equivalence. We attempted to guard against this by only including children older than 2 years. In addition, we limited our study group to only those children who had at least 1 prior episode of shortness of breath or wheeze that was treated with salbutamol.

Finally, we did not differentiate between mild and moderate asthma exacerbations; hence, we cannot comment on whether there were significant differences between these 2 groups. Difference in severity of disease between our 2 treatment groups was unlikely because the PIS was similar for both groups at initial presentation, at discharge from the ED and at day 5 follow-up. In addition, our conclusions should not be extrapolated to patients with severe asthma because they were not included in this study.

CONCLUSIONS

In summary, for children with mild to moderate asthma exacerbations, our study suggests that a single dose of oral Dex is no less effective than 5 days of oral Pred. Furthermore, the single-dose regimen offers a more convenient and easily administered option compared with the current standard of 3 to 5 days of oral steroids. Although these results are encouraging due to the number of study limitations discussed above, we feel that more clinical trials are warranted before recommending a change in clinical practice. This study highlights the importance of continued follow-up for all children presenting with symptoms of acute asthma exacerbation.

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