

Short reports

Low dose prednisolone in nephrotic syndrome

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SUMMARY Sixteen patients with steroid responsive nephrotic syndrome were treated on 29 separate occasions with a low dose of prednisolone (30 mg/m²/day). All went into remission within 14 days. The duration of remission in the six patients who had had previous relapses treated with a higher dose of prednisolone was similar.

Prednisolone was used for children with nephrotic syndrome in 1956, when Arneil described four children (age 2-8 years) all of whom responded to prednisolone 60 mg daily.¹ Subsequently a dosage of 60 mg/m²/day has been accepted as standard treatment.² There have been several studies that have looked at the effect of duration of prednisolone in relation to long term outcome.^{3,4} The dose of prednisolone required to achieve remission has not been studied. The aim of this study was to see whether remission could be induced with half the standard dose of prednisolone.

Patients and methods

New patients with nephrotic syndrome (proteinuria >40 mg/hour/m², hypoalbuminaemia <25 g/l, and oedema) who had not previously received corticosteroids from their general practitioner or the referring hospital were entered into the study. Patients with nephrotic syndrome who were attending the Regional Paediatric Nephrology Clinic on a regular basis who had a definite relapse, indicated by a heavy proteinuria (Albustix ++++) for seven consecutive days or oedema in the presence of heavy proteinuria, were entered into the study. Patients were given a single daily dose of prednisolone (30 mg/m²) each morning. If, after 14 days, there was no remission then the daily dosage was increased to the standard 60 mg/m². Remission was defined as three consecutive days without abnormal proteinuria (<4 mg/hour/m² (Albustix 0 or trace)). Once remission was induced, the dose of prednisolone was gradually

decreased over the next four to six weeks, so that patients were back on maintenance prednisolone (frequent relapsers) or off treatment altogether (new patients).

Eight new patients (age 2-11 years) and nine relapsed nephrotics (age 2-16 years) entered the study. The latter had been diagnosed one to 15 years previously. Seven had received at least one course of cyclophosphamide.

Results

One child had steroid resistant nephrotic syndrome and failed to respond to either 30 mg/m²/day or 60 mg/m²/day. The other 16 children all went into remission within 14 days. The median number of days for the induction of remission was seven days (eight for new patients, six for relapsed nephrotics). The 16 patients were treated on 29 separate occasions with low dose prednisolone and consistently went into remission within 14 days. The duration of the remission was shorter for the new patients (1.5-8 months, median 3) than for the relapsed patients (2-17 months, median 6). Three new patients had their first relapse within two weeks of stopping steroids.

The records of those nine patients who had previously been treated with steroids were reviewed in order to determine the duration of remission and the dose of prednisolone used. Two children had been treated previously with 30 mg/m²/day prednisolone. One patient has been in remission for seven months but as she received cyclophosphamide shortly after going into remission with the low dose of prednisolone her data have not been included. The other six children all received up to 65 mg/m²/day. The 10 remissions after 30 mg/m²/day prednisolone (prospective) and 16 remissions (retrospective) after 35-65 mg/m²/day prednisolone are shown in the figure. Both the mean and the median duration of remission were similar in the low dose (prospective) and standard dose (retrospective) treatments (mean, 6.9 and 7.6 months respectively; median 7.5 and 5.5 months respectively).

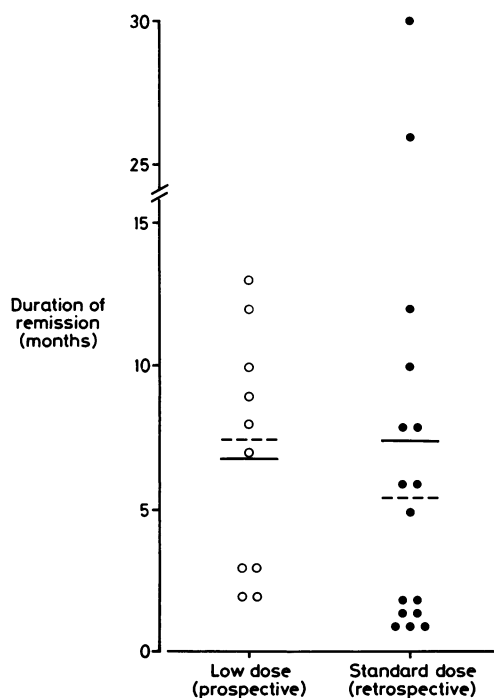


Figure Duration of remission in six patients after 30 mg/m²/day prednisolone (prospective) (○) and 35–65 mg/m²/day prednisolone (retrospective) (●). The mean (—) and median (---) values are shown.

Discussion

Steroid toxicity is common in children with nephrotic syndrome and is related to both the dose and duration of treatment.⁵ Two recent studies have suggested that a longer course of treatment has a favourable effect on the remission period.^{3 4} The dose of prednisolone, however, has not been investi-

gated and the standard dose of 60 mg/m²/day has been used in most major studies.^{2–4} Prednisolone is often administered in divided doses each day and thus the equivalent single daily dose is greater than 60 mg due to its dose dependent kinetics.⁶ These results, albeit in a small number of patients, suggest that in most children with nephrotic syndrome, remission can be induced with a low dose of prednisolone (30 mg/m²/day).

It is not possible to compare directly the prospective data after the low dose prednisolone with the retrospective data obtained from the case notes, as the disease process varies with time. This is clearly shown in the varying duration of remission for the retrospective data. The similarity between the prospective and retrospective data, however, suggests future studies should look at the dose of prednisolone as well as the duration of treatment, both in newly diagnosed nephrotics and also in cases of relapse.

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