Growth Monitoring and Use of Growth Hormone in Children with Renal Failure

Hanna Lythgoe1, Emma O’Hagan2, Mohan Shenoy1
1 Royal Manchester Children’s Hospital

Background

• Chronic renal failure can cause significant growth impairment.
• Many factors contribute towards growth failure and it has a significant impact on morbidity, mortality and quality of life.
• Growth failure defined as <2nd centile for height
  o 29% of children who undergo renal transplantation are <2nd centile for height
  o 41% of children on dialysis are <2nd centile for height
• Patients who undergo renal transplantation experience some ‘catch-up’ growth but most patients do not reach their target height.
• It is important that growth is monitored regularly and growth failure addressed, including offering patients growth hormone (GH) where appropriate.

Growth Hormone

• Effects on short-term growth velocity (1 year) range from no improvement to approximately 1 standard deviation above the normal growth velocity
• Gains in final height range between 3–9 cm
• Side effects include headache, paraesthesia, blurred vision, nausea and vomiting and injection site reactions
• Patients with chronic renal insufficiency or post transplantation are eligible if: height <2nd centile; no syndrome meaning GH deemed inappropriate; and parents and patient willing

Aim

We appraised our current practice to see how well we are monitoring growth in renal failure patients and if we are offering GH to eligible patients.

Method

We defined standards from NICE guidelines and Bristol guidelines endorsed by BSPED. We collected data from 76 patients on haemodialysis, peritoneal dialysis or post-renal transplant.

Standards

• Every child should have a growth chart in their current notes
• Every child should have growth measured and plotted at least twice a year
• All children with growth failure who are suitable should be offered growth hormone
• Growth hormone should be stopped if:
  • growth velocity increases less than 50% from baseline in the first year of treatment
  • final height is approached and growth velocity is less than 2cm total growth in 1 year
  • there are insurmountable problems with adherence
  • final height is attained

Results

• 16/44 (36%) post-transplantation and 20/32 (62%) dialysis patients had growth failure as defined by height <2nd centile, slightly higher than quoted in the literature (29% and 41% respectively).
• 53/76 had growth charts in their notes, and 39/53 had their height and weight plotted regularly.
• 12 patients were potentially eligible for GH and not previously offered it.
• 11 patients were on or had previously received GH and were managed in line with NICE guidance.

Conclusions

• Growth monitoring needs to be improved in renal failure patients.
• Growth failure should be highlighted in the problem list and addressed at clinic visits to improve their growth.
• 12 patients need discussing jointly by the nephrology and endocrinology teams and considering for GH.
• Patients on or who have had GH are managed appropriately.

Impact on Practice

• 4 patients in the post-transplantation group (first group reviewed) have been offered GH and 2 families accepted it. 8 patients are currently being reviewed.
• Growth charts have been placed in all patient notes.
• Findings have been shared with the nephrology team in a local meeting to improve awareness.

References

UK Renal Registry 17th Annual Report: Chapter 5 Clinical, Haematological and Biochemical Parameters in Patients Receiving Renal Replacement Therapy in Renal Care Centres in the UK in 2013: National and Centre Specific Analyses
Human growth hormone (somatropin) for the treatment of growth failure in children – NICE guidance May 2010

Central Manchester University Hospitals NHS