GH BEYOND SHORT STATURE: PROS

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GH

- GH has important effects on the intermediary metabolism of
  - Carbohydrates
  - Lipids
  - Proteins

- Acute effects similar to insulin:
  - hypoglycemia
  - enhances transport, metabolism and storing of glucose and a.a.
  - Increases synthesis of proteins and lypogenesis
Long term effects
- hyperglycemia
- hyperinsulinemia
- increased lypolisis
- decreased transport of glucose
- increase in the level of non sterified fatty acids
- decreased metabolism of glucose
- insulin resistance.
Adults with GHD show

- Dyslipidemia
- Increased total fat mass
- Early atherosclerosis
- Decreased fibrinolytic activity
- Increased in peripheral insulin resistance
- Increased glucose intolerance
- Altered cardiac structure and function
- Changes in body mass composition, increased visceral fat
- Decreased physical performance
- Low adiponectin levels
Treatment with GH has shown to:

- Decrease BMI and total fat mass after 6 months
- Increase muscle mass after 2 years in both genders.
- Improved lipid profile fasting and postprandial (LDL and Triglycerides).

Lanes R. metabolic abnormalities induced by growth hormone Deficiency: Improvement with Growth Hormone Treatment.


Twickler TB. Induction of postprandial inflammatory response in adult onset growth hormone deficiency is related to plasma remnant–like particle–HDL cholesterol concentration. J Clin Endocrinol Metab. 2003;88(3):1228–33
FACTS IN GHD:
- Increase in non traditional inflammatory markers like homocisteine.
- Endothelial function deteriorates
- Inferior Quality of life
- Elevation of activator factor of tissular plasminogen inhibitor 1, fibrinogen and factor VII.
- Decreased cardiac function with decreased left ventricular mass, ejection fraction and altered in diastolic feel
- Increase in atheromatose plaques
- Increase in media thickness
- Decrease aortic distensibility
GHD/CARDIOVASCULAR

- Treatment with GH has shown
  - Improvement of lipid profile
  - Increase the left function and ventricular mass.
  - Reverts early atherosclerotic changes measured by intima thickness.
  - Decreases fibrinogen
  - Ameliorates cardiac function

Stopping treatment showed
Worsen of dyslipidemia
REFERENCES


GH also helps the bone mineral density, controlling bone turnover and helps peak bone mass.

Gh treatment has shown to increase bone mineral density in GHD with improvement of bone turnover markers

Two years of GH at 12.5 mcg/kg/day (n=58) or 25 mcg/kg/day (n=59) compared to control group (n=32) patients with GHD. There was a significant increase in bone mineral density in patients receiving GH. (Shalet et al).
SGA

- SGA children without catch up have decreased GH secretion over 24 hrs, low IGF1 and IGFBP3.

- SGA children have decreased glucose captation mediated by insulin, and less suppression of free fatty acid, as well as insulin resistance.

- GH produces a significant improvement of the intellectual coefficient in those patients.
Gh improves neurocognitive and behavioral function in SGA children.

Improves body composition, blood pressure and lipid profile also in SGA.

378 SGA patients that received GH for 3 years showed significant improvement in muscle mass.


CONCLUSIONS

- GH not only improves final height in GHD, SGA and TS.

- It prevents cardiovascular disease and metabolic complications in GHD and SGA patients.

- Improves bone mineral density in TS patients.

- Improves quality of life overall in those indications.