Introduction
McCune-Albright Syndrome is a pathological entity defined by skin, bone and endocrine disorders, due to activating mutations in the GNAS-1 gene. Reported cases exhibit heterogeneous clinical symptoms. The genetic analysis is an adjuvant investigation, reserved for the mild, subclinical cases. Some of the patients with clear clinical McCune-Albright features have negative results regarding GNAS mutations, as the positive detection rate has been reported to range between 23%-100% in different studies.

Case report
The 8 year old boy, previously diagnosed with monostotic fibrous dysplasia of the skull involving the frontal and temporal region and left optic canal, was referred due to signs of pubertal development since the age of 6 years. There was facial asymmetry due to abnormal skull bone formation (Fig. 1 and 2), with only one cafe-au-lait spot in the right subscapular area (Fig. 1). Genetic analysis of GNAS in peripheral lymphocytes was normal, suggesting somatic mosaicism. After clinical and biochemical assessment we had evidence that at least three hormonal axis were affected: 

- **GH/IGF-1:** growth above 97th percentile and accelerated bone age. 
- **GH basal 11.4 ng/ml, IGF-1 levels +4 SDS, GH excess after oral glucose load (minimal suppression of 7.7ng/dl)**
- **Androgen:** pubic hair stage Tanner IV with asymmetric testicular development; testicular volume (6 and 10ml) (Fig. 3)
- **Prolactin:** Hyperprolactinemia (224.8 ng/ml, n.r. 4-15.2 ng/ml)

**Therapy**
- Pegvisomant (Somavert ®): 10 mg daily s.c.
- Cabergoline (Dostinex ®): 2x 0.5 mg per week
During therapy growth decelerated and GH and prolactin levels normalised (Fig. 4).

An anti-androgenic therapy has so far not been started due to low testosterone levels, good height prognosis and the peripubertal age of the patient (Fig. 5).

Discussion
There are few reports in the literature regarding therapy with Pegvisomant in the paediatric population with GH excess [1]. The main therapy target in this patient is lowering IGF-I, as high levels represent a risk for compression of the optic nerve by the fibrotic bone tissue [2]. Boys with MAS and signs of secondary sex characteristics are also rarely found in published reports, although testicular enlargement is common. The inconsistent result of LHRH testing with a rather low testosterone level in this case speaks for an intermittent testicular activation, like it has been described in girls with MAS and pseudoprecocious puberty. An alternative explanation is a direct stimulatory effect of IGF-I at the testicular level [3].

Acknowledgements
We thank Michael Collins (National Institutes Of Health, USA) and Katharina M. Main (University Department of Growth and Reproduction, Rigshospitalet, Copenhagen, Denmark) for sharing their experiences with treatment of hormone excess in MAS

References