PROXIMAL MICRODELECTION 16p11.2 SYNDROME

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INTRODUCTION

Childhood obesity is the consequence of a complex interaction among several factors: environment, genetics, endocrine disorders, medications and other conditions.

Genetic factors have to be taken in account in obese children especially when they present dysmorphism and/or behavioral alterations.

CASE REPORT

XX, 9.37 years, was referred to our Clinic for **obesity** and **psycho-motor delay**.

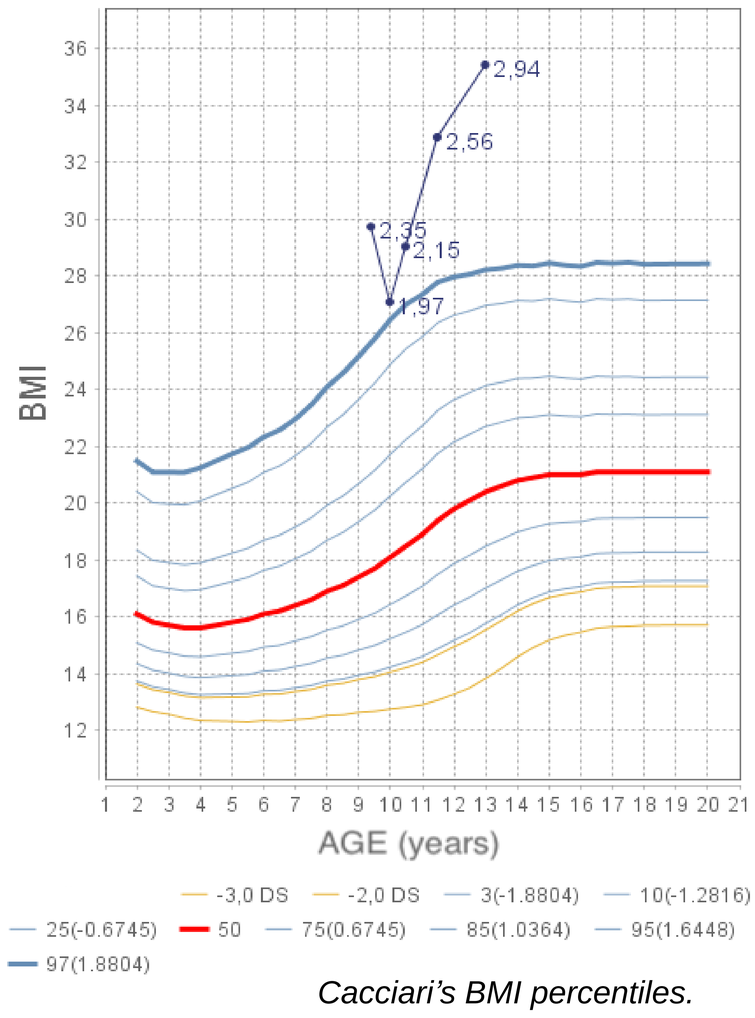
Family history: Fibromyalgic mother, 2 maternal cousins with psycho-motor delay, paternal uncle with epilepsy and intellectual disability.

Born at term from caesarean section for placental detachment after physiological pregnancy (b.w. g 1900, SGA). In the first years of life she had psychomotor retardation, affective spasms, nocturnal enuresis, aggression in case of food containment, allergic asthma treated with steroid, DSA and language disorder (followed by child neuropsychiatry and scholastic support), headache (negative brain MRI, EEG anomalies, on therapy with Oxcarbazepina), mild right transmission hearing loss.

At physical examination height and BMI were at the upper percentiles (Figure 1) (Height 138,1 cm, 83 ° perc, SDS Height 0.95, TH-SDS 2.13 and Weight 56,7 Kg, BMI 29,73 kg/m^2, SDS BMI 2,35). She showed initial signs of pubertal activation (P1-2, S2) and several dysmorphic features: synophry, reduced intercantal distance, small mouth, acanthosis at the base of the neck, hump, lower limb valgus, fifth finger clinodactyly of right hand, relevant abdominal adipose panniculus.

DIAGNOSTIC HYPOTHESES AND FIRST AND SECOND LEVEL INVESTIGATIONS

- Normal Thyroid Function: TSH (2,49 mcUI/ml) and FT4 (13,9 pg/ml),
- Cortisolemia at the lower limits (2,3 mcg/dl), with normal adrenal function, (ACTH 16,8 pg/ml, 17OHP 0,3 ng/ml, Androstenedione 130 ng/dl, DHEAS 0,99 mcg/ml)
- Prepubertal hormonal structure (LH 2,1 mUI/ml, FSH 4,8 mUI/ml, Estradiol <10 pg/ml
- Insulin resistance (blood sugar / insulin 4.06, HOMA index 4.10);
- Abdomen ultrasound (steatosis);
- Fibroscan (modest fibrosis);
- Karyotype (normal female 46, XX)
- Rx rachis (left-convex scoliotic attitude, bilateral cervical rib sketch, antiversion of the physiological lordosis),
- Echocardiography (normal)



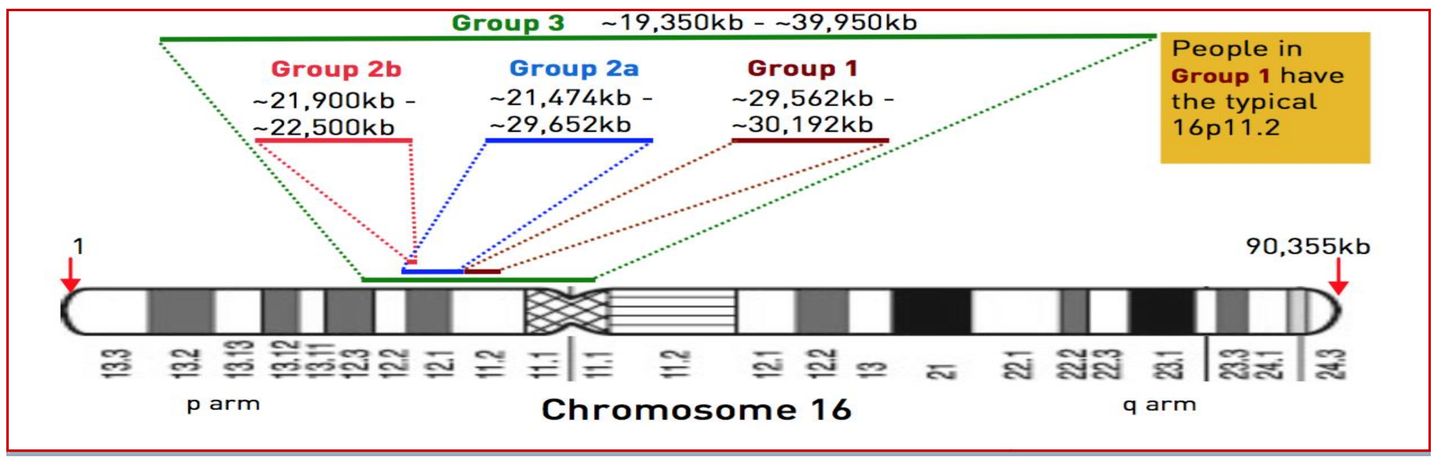
Cacciari's BMI percentiles.

DIAGNOSIS

Microarray analysis ➡ deletion of 813kb in 16p11.2 arr [hg19] 16p11.2 (29.427.215-30.240.227) x1, including the deletion of 593kb responsible for **Proximal Microdelection 16p11.2 syndrome.**

This syndrome, from contiguous genes, is characterized by delayed development and language, mild cognitive impairment, social disability (autism spectrum disorders), mild variable dysmorphism, EEG abnormalities, predisposition to obesity, vertebral anomalies. Microdeletion 16p11.2.

Group 1 explains all the clinical features presented by our patient.



SUSPECT CRITERIA FOR 16p11.2 RECURRENT MICRODELETION

- Delayed language development and abnormal speech articulation
- Learning difficulties/intellectual disability
- Social impairments with or without a diagnosis of autism spectrum disorder (ASD)
- Macrocephaly
- Chiari 1/cerebellar tonsil ectopia
- Seizures/epilepsy
- Vertebral anomalies
- Obesity starting in adolescence, and in the setting of developmental delay
- Cardiac malformations

CONCLUSIONS

The presence of obesity suggests that this deletion could affect a gene region involved in the predisposition to obesity.

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