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The Micropenia: Aetiological , Therapeutic And Evolutionary Aspects

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***Abstract**: The micro penis (penis length <2.5 SD below the mean for age.) is a frequent reason for consultation in the neonatal period, but also in childhood and adolescence . Its causes are many. We report a retrospective study of 30 patient with micropenia (14 children, 4 teens and 12adultes). The average age of consultation and diagnosis was 4.5 ± 0.3 years (1 month - 11 years) in children, 15 ± 0.2 years (13- 18) in adolescents and 30 ± 1.8 years in adults (23-45). The main reason for consultation in children and adolescents was micropenia . 12 children looked for growth delay . The reason for consultation in adults was the signs of hypogonadism in all cases.The length of the penis was between 1 and 3.5 cm (-2 to -4 DS DS for age). All patients had a normal karyotype 46 XY. Etiologically , it is due to a central hypogonadism (40%), growth hormone deficiency (7%) and gonadal dysgenesis (3%). 50% of cases are idiopathic . In half of cases , micropenia in children (Mainly idiopathic and pituitary deficiency) responded favorably to androgen (androtardyl) and biosynthetic growth hormone in the case of growth hormone deficiency .The younger children (<6 years) (n: 8) Responded best than the others .*

***Keywords:** Micrpenia, cryptorchidism, hypospadias, hypogonadism, androgen*

I. Introduction

The micro penis (penis length <2.5 SD below the mean for age.) is a frequent reason for consultation in the neonatal period, but also in childhood and adolescence (1) . Its causes are many. It can be idiopathic or s associate with a chromosomal abnormality, hypogonadism, pituitary abnormality complex malformation syndrome or be related to exposure during intrauterine life to endocrine disruptors (2) (3). Its therapeutic management should be early to get an effective action and especially avoid psychological and sexual repercussions in adulthood.

The objective of the study was to describe the aetiological, therapeutic and evolutionary aspects of patients with micropenis diagnosed in endocrinology consultation.

II. Population, Methodology

This is a retrospective study of patient records admitted to the endocrinology department between January 1996 and December 2015, including all patients with a micropenis. A careful analysis of clinical and laboratory data was performed specifying the concept of iatrogenic cause (drug Taking ..), diagnostic circumstances, the presence of other anomalies of the external genitalia (cryptorchidism, hypospadias ...), signs of hypogonadism or other signs of hypopituitarism (growth hormone deficiency ...) and malformative lesions.

III. Results

30 patients were identified including: 14 children, 4 teens and 12adultes .
The average age of consultation and diagnosis was 4.5 ± 0.3 years (1 month - 11 years) in children, 15 ± 0.2 years (13- 18) in adolescents and 30 ± 1.8 years in adults (23-45).

The main reason for consultation in children and adolescents was micropenia . 12 children looked for growth delay (Table I)

Table I: Reason for consultation

Reason for consultation	Nb (%)
Micropenia	50
Micropenia + Hypospadias	40
Growth Delay	66.6

When micropenia was isolated (50% of cases), it was discovered later in puberty period (average age: 13, 5 years ± 0.1). Elevators testicles associated with micropenia were noted in 2 children (6% of cases). The length of the penis was between 1 and 3.5 cm (-2 to -4 DS DS for age). All patients had a normal karyotype 46 XY.

The reason for consultation in adults was the signs of hypogonadism in all cases.

Etiologically , it is due to a central hypogonadism (40%), growth hormone deficiency (7%) and gonadal dysgenesis (3%). 50% of cases are idiopathic (Fig1) .

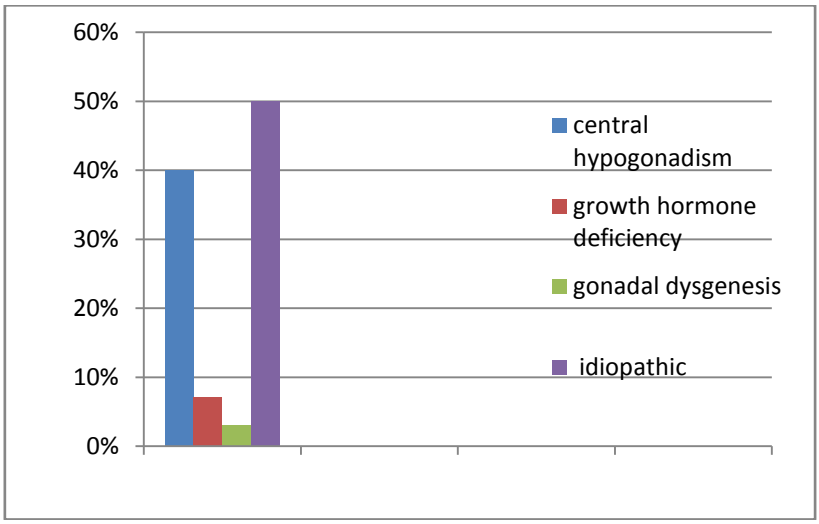

Fig1: Aetiologies of micropenia in patients

Fig2:The micropenia

In half of cases , micropenia in children (Mainly idiopathic and pituitary deficiency) responded favorably to androgen (androtardyl) and biosynthetic growth hormone in the case of growth hormone deficiency .The younger children (<6 years) (n: 8) Responded best than the others .

IV. Discussion

Micro penia is defined as congenital hypoplasia of the penis. It is an insufficient development of normal anatomic configuration (Fig 2)(2). Its prevalence is 1/10 000 males newborn (4).

Genital examination during the neonatal period or during infancy is very important to avoid late diagnosis (cases of our patients) . It is particularly regrettable that the psychological impact on the teenager and later in adult is sometimes dramatic (5). Its recognition is crucial for all practitioners. Looking for hypospadias, cryptorchidism or related malformation must be systematic. The evaluation of growth velocity should not be neglected in children.

Indeed, the micro penis can be a diagnostic circumstance for growth hormone deficiency. It is present in 50% of boys who are diagnosed in the first few weeks (6).

Some clinical manifestations evoke other pituitary deficits, and should suggest the diagnosis. This is the case of prolonged jaundice, present in 40% of neonatal cases (6), suggestive of glucocorticoid deficiency, bilateral cryptorchidism, evocative of gonadotropin deficiency and craniofacial anomalies (retinal or iris coloboma, cleft lip or cleft lip and palate, nystagmus, strabismus, or blindness Septo-optic dysplasia) Should also lead to evaluation of pituitary function (7)(8)(9)

In fact ,the causes of micro penia are multiple. Alterations of the gonadotropic axis represent 30 to 40%. 10% are related to genetic disorders.The association of micropenia with hypospadias and or cryptorchidism can be linked to an abnormality of sexual differentiation XY which should identify the cause (10).

In half of cases, aetiology of isolated micropenia remains unknown to date. For these micropenis considered "idiopathic", it is highly likely that environmental endocrine disruptors play a major role.
There is a link between genital malformations of the boy and the risk of fetal contamination by pesticides in the mother.A farmer child has 4.5 times more risk of developing genital malformation that a child is not exposed during fetal life (11)

The study conducted in the Northeast region of Brazil (12) has demonstrated these actions. The prevalence of micropenia was 40 times higher than that reported in the literature. This is not a causal relationship but fetal contamination by habitationnel or professional environment. The people of this region were mostly farmers using DDT to protect against crawling and flying insects.It is well established that pollutants with similar properties to female hormones (estrogens) or antagonistic to those of male hormones (antiandrogens) promote the development of genital malformations in type of hypospadias but especially of micropenia.

Analysis of the production of testosterone at baseline and after stimulation with hCG (1500 ui j 1/2 x 7) is informative, especially in the neonatal period and peri-pubertal, to assess the Leydig cell activity . At the end of the test, the increase in length of the rod reflects a normal responsiveness to androgens. in some cases, an androgen sensitivity test is required (Androtardyl 100 mg / m2 every 15 days x 3). The dosage of AMH is increasingly used to guide to an abnormality of testicular determination in case of low value. The evaluation of the secretion of gonadotropins base and after stimulation by LH RH is often useful in the newborn as adolescents, to identify possible hypogonadotropic hypogonadism. If no cause is identified, it should be a rigorous investigation to eliminate contamination by endocrine disruptors.The micro penia should be treated to ensure normal urination, normal sexual function and a good self image. Regardless of the underlying cause, hormone therapy should be tried in patients with micropenia to assess the ability of the penis to respond .. Children with congenital hypopituitarism respond easily to appropriate hormone treatment.

The treatment may consist of testosterone injections . When micropenia is linked to insensitivity to testosterone, hormone treatment has no effect.When micro penia is detected early, treatment implemented is quickly effective. Treatment may also be required at the time of puberty. After puberty, hormone therapy is no longer effective because the tissues do not react similary.The micro penia can have significant psychological impact, especially during adolescence . So it is important that the patient be helped and doubts considered.

In adulthood, if the subject is very complexed by the size of his penis, surgery may be proposed. The section of the suspensory ligament of the penis can be proposed. It does not alter the penis but making it seem longer. The observed gain of 1 to 2 cm in the flaccid state and 1.7 cm in erection.The injection of autologous fat is to inject the fat under the skin of penis. This does nothing lengthens the penis, but visually makes it thicker. Only a portion of the grease introduction is not resorbed by the body over time (10 to 50% depending on the subject) (13).

Regarding the role of endocrine disruptors (solvents, detergents, pesticides, plastics, cosmetics ... ..) during pregnancy, they are very numerous and difficult to eradicate completely. They pose a major risk to human health and future generations. They are in fact characterized not by a direct toxic effect but by a change in the hormonal regulation system . Also, it is important to insist on the necessity to respect the environment by restricting the use of pesticides, by making their strict control and be vigilant if the occupations of both parents and their homes play a role in this exhibition

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