# Late diagnosis of mixed gonadal dysgenesis - clinical and psychological implications
## CASE REPORT

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## Introduction

Mixed gonadal dysgenesis (MGD) is a disorder of sex development associated with a numerical sex chromosome abnormality (45,X/46,XY ; 45,X/47,XYY; 45,X/46,XY/47,XYY);

Reported genital phenotypes range from female external genitalia or mild clitoromegaly through all stages of ambiguous genitalia to hypospadias or a normal penis, depending on the proportion of monosomic cells;

**Male genitalia**

- bilateral testicle
- 46 XY cell line may predominate
- hypospadias / cryptorchidism
- spontaneous puberty
- the delay in development of pubertal development due to testicular failure
- short stature

**Ambiguous sex organs**

- the most common clinically
- early diagnosis
- testicles disgenetice / a testicle and a bands gonads disgenetic
- difficult decision for parents in choosing the sex

**Female genitalia**

- associate bilateral gonadal bands
- may stigmata of Turner syndrome (probably prodominanta 45 cell line , X)
- 2-5% of patients with Turner syndrome have mixed gonadal dysgenesis

## Case Report

✸ **Patient:**
- female patient
- 18 years old
- was send to Endocrinology Department for primary amenorrhea
- absence of secondary sexual characteristics
- obesity

✸ **Medical history:**
- Hypertension (maximum Sistolic Blood Pressure 180 mmHg);
- Ventricular Septal Defects
- Childhood obesity

Fig.2

✸ **May be stigmata of Turner syndrome but with high stature?**
- Short 4th and 5th metacarpals
- Epicanthic fold
- Hiperconvex nails
- Height 172 cm, Weight 102 kg (BMI =32,9 kg/m$^2$)

✸ **Clinical examination**
- Pubertal stage (Tanner):PIVBI
- Moon facies
- Facial erythema
- Achantosis nigricans in the posterior cervical and axillary region
- Female External Genital Organs (vagina ~ 8 cm)

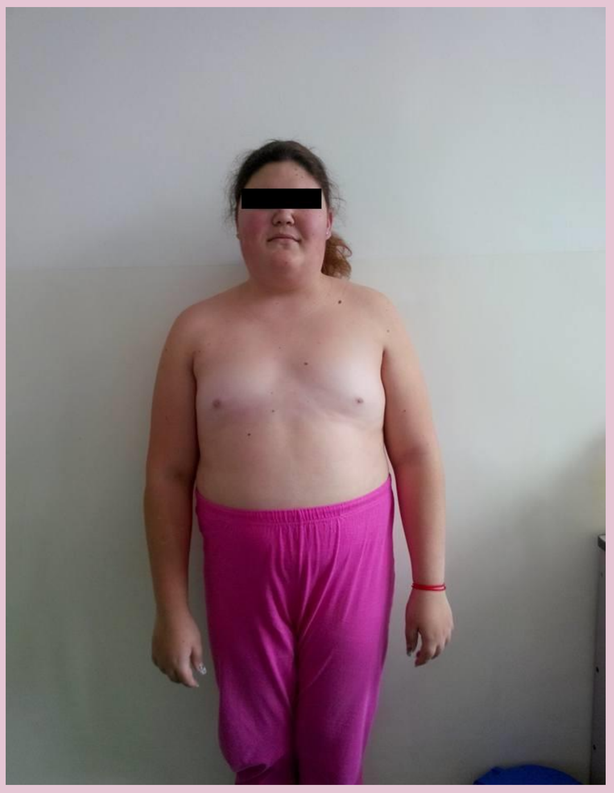

Fig.1: Patient B.S., 18 years old

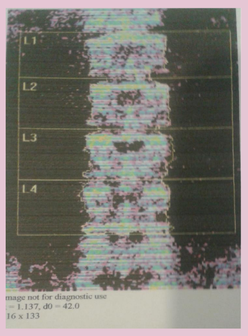


Fig.3: Osteodensitometry

✸ **Treatment**
- Oestradiol 0.75 mg/d
- Metformin 1000 mg/d
- Vitamin D 300 000 UI/3 m
- Beta blockers
- Sartans

✸ **Laboratory findings**
- **Hypogonadism hipergonadotrop**
  - Estradiol < 5 pg/ml
  - FSH = 49.5 mIU/mL
  - LH = 17.7 mIU/mL
- **Dyslipidaemic syndrome**
  - Cholesterol =233 mg/dl (N:120-200)
  - LDL =191 mg/dl (N:0-130)
  - HDL =33 mg/dl (N: 45-65)
- **Vitamin D deficiency** 10.47 ng/ml (>30)

✸ **Investigations**
- **Abdominal and Pelvic Ultrasound:**
  - hepatic steatosis
  - small uterus (41/11/9 mm)
  - two small hypoechogeny formations (possible ovarian residue)
- **Breast ultrasound** - absence of breast tissue
- **Karyotype** - 45,X/46,XY
- **Bilateral gonadectomy -** histological examination revealed gonadoblastoma and dysgerminoma on both gonads, without capsular penetration or vascular invasion
- **Immunohistochemistry:**

- CD117, PLAP, inhibin and calretinin – positive
- AFP, EMA, ck7, CD 30 - negative

- **Psychological consultation** - generalized anxiety disorder and female gender identity
- **Other data -** Delayed bone age ~ 16 years
  - BMD/DXA**:** osteopenia Z-score spine= - 1,6 DS

## Discussions

- Early diagnosis of mixed gonadal dysgenesis is very important because its high potential for malignant transformation, prophylactic gonadectomy is strongly recommended soon after diagnosis
- And because a timely hormonal therapy can avoid complications induced by hormonal imbalance: lack of secundary sexual characters and because.
- Delayed diagnosis favoured several complications like: obesity, hypertension, dyslipidemia, hepatic steatosis, insulin resistance and last but not least, generalized anxiety disorder

**References:** http://www.ncbi.nlm.nih.gov/books/NBK279144/, http://emedicine.medscape.com/article/1015520-overview, https://www.aace.com/files/hypo-gonadism.pdf.



55ESPE 880--P2

Syndromes : Mechanisms and Management

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DOI: 10.3252/pso.eu.55ESPE.2016

Poster presented at: ESPE 2016 PARIS 10-12 SEPTEMBER

PosterSessionOnline.com