



# Reproductive Block

## • LECTURE

**DOWN SYNDROME  
TURNR SYNDROME  
KLINEFELTER SYNDROME**

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### Trisomy 21: The Story of Down Syndrome

1866, John Langdon **Down** described a set of children with common features who were distinct from other children with mental retardation "**Mongoloids.**"

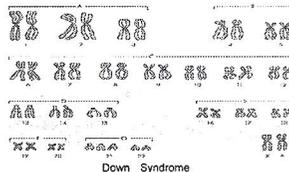


1960s, This unfortunate name based on notion that these children looked like people from Mongolia was dropped from scientific use. Instead, the condition became called "**Down's syndrome**"



John Langdon Down  
1828-1896

1959 , Jerome Lejeune and Patricia Jacobs, working independently, first determined the cause to be trisomy (triplication) of the 21st chromosome. **Trisomy21**



## TRISOMY 21

The most frequent viable chromosome disease.

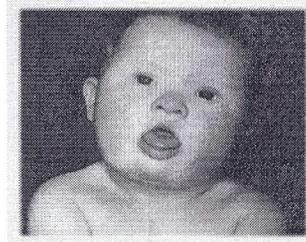
Associates:

*dysmorphia* +  
*psycho-motor delay*, and possible  
*visceral malformations* (found in more than 1/3 of cases);

### •EPIDEMIOLOGY

•1,5 /1 000 births.

### •Dysmorphic syndrome associating :

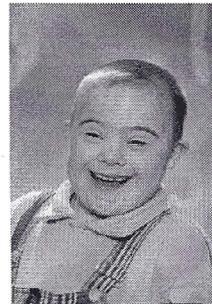


- frequent microcephaly, short neck, flat occiput and brachycephaly;
- moon-shaped face;
- flat nasal bridge;
- epicanthus (regresse with age);
- upward slanting palpebral fissures;
- Brushfield spots in the iris
- frequently open mouth;
- high arched narrow palate;
- late appearing/malformed teeth (numerical anomalies, agenesis of lateral incisors...);



- **short and broad;**
- **brachymesophalangia of the 2nd and 5th fingers;**
- **clinodactyly of the 5th finger;**
- **flat feet;**
- **first toe set apart from the others by a gap, with a crease.**
- **transverse palmar crease**

- **hypotonia +++**
- **the mental retardation.**
- **children's behaviour:**
- **Seizures .**

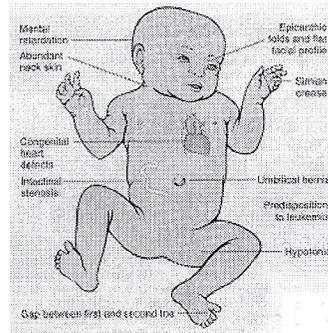


•- **Malformations (45% of cases):**

•**Heart (40%):**

•**Digestive (10 %):**

•**Ocular:**



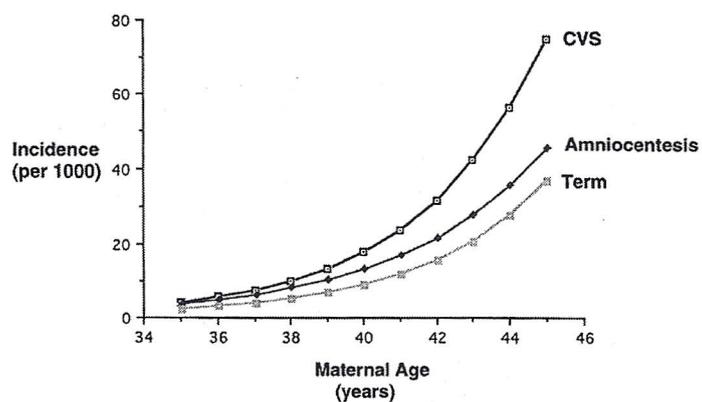
•**DIAGNOSIS: THE KARYOTYPE**

•**Free trisomy 21 (92,5 % of cases):**

•**Free trisomy 21 in mosaic (2,5 % of cases):**

•**Trisomy 21 due to translocation:**

•**Other:**



Incidence of trisomy 21 at the time of chorionic villus sampling (10-11 weeks), amniocentesis (16 weeks) and term.

The incidence of trisomy 21 increases with increasing maternal age.

**Turner syndrome** is a syndrome of

- growth retardation and
- impuberism

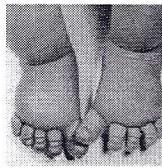
**Epidemiology:**

0.4 /1000 female births

(but 20 % of chromosome anomalies found in early miscarriages, i.e. about 10% early miscarriages).

## Clinical features

- prenatal and postnatal growth retardation
- single umbilical artery frequently.
- excess of skin and webbed skin on the nucha (pterygium colli).
- widely spaced nipples.
- lymphoedema of hands and feet.



### BIRTH DEFECTS



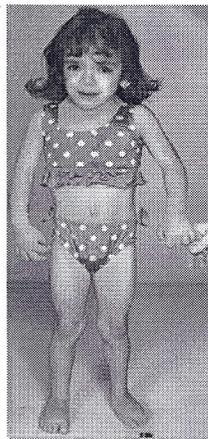
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- small size (adult < 1,45 m).
- normal or subnormal intelligence
- Osteoporosis above 45 yrs.

- short neck.
- pterygium colli .
- low hair line.
- low set ears.

- shield chest.
- widely spaced nipples.
- Coarctation of aorta

- multiple pigmented nevi.



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- triangular shaped face,
- looks sad.
- possible epicanthus.
- downward slanting palpebrale fissures.
- high-arched palate.

- cubitus valgus .
- short 4th metacarpal.
- hypoplastic nails

- Streak ovaries.
- infantile external genitalia.
- hypoplastic uterus.
- amenorrhea and sterility.
- absence of breast development.
- rare pubic pilosity.

**•Malformations:**

- cardiovascular (20-30%).
- renal (40-50 %): horseshoe kidney...
- congenitally dislocated hip, scoliosis
- sense-organs

**Diagnosis: the karyotype:**

- 45, X . : 55 % of cases.
- mosaicisms... -->
- [ r(x); del (Xp), del (Xq); i(Xp), i(Xq) ]

**KLINEFELTER SYNDROME**

- normal intelligence or mild retardation,
- infertility,
- possible behaviour or psychiatric problems,

**Epidemiology:**

- 1.5 /1 000 male births.
- increased maternal age.

### Common Clinical features of Klinefelter syndrome

- Tall stature
- Long legs
- Frontal baldness absent
- Slightly feminized physique
  - Gynecomastia
  - Narrow shoulders
  - Wide hips
  - Feminine fat and hair distribution
  - Reduced body hair
  - Reduced facial hair
  - normal or rare, feminine shaped pubic pilosity
- Testicular atrophy
- Hypogonadism
- Reduced testosterone levels
- Infertility
- Educational difficulties
- Intelligence can be 10-15 points lower than siblings but usually in normal range
- Behavioural problems.

### • **Diagnosis: the karyotype:**

- **47 XXY homogeneous: 80 % of cases.**
- **XXXXY, XXXXY, XXYY: 10 %.**
- **in mosaic: 5-10 % .**