Reproductive Block

•LECTURE

DOWN SYNDROME
TURNR SYNDROME
KLINEFELTER SYNDROME

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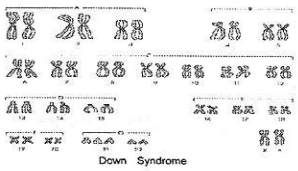
Trisomy 21: The Story of Down Syndrome

John Langdon Down
1828-1896

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"**

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



Down Syndrome

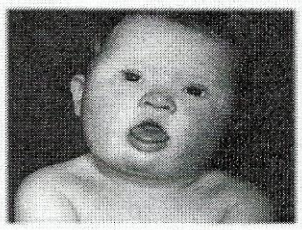
TRISOMY 21

The most frequent viable chromosome disease.
Associates:
dysmorphia **+**
psycho-motor delay**, and possible**
visceral malformations **(found in more than 1/3 of cases);**

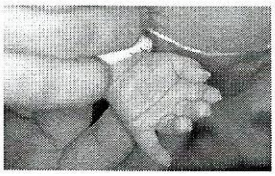
•EPIDEMIOLOGY

•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**

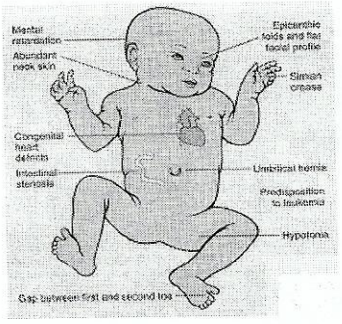
- **hypotonia +++**
- **the mental retardation.**
- **children's behaviour:**
- **Seizures .**

•- Malformations (45% of cases):

•Heart (40%):

•Digestive (10 %):

•Ocular:



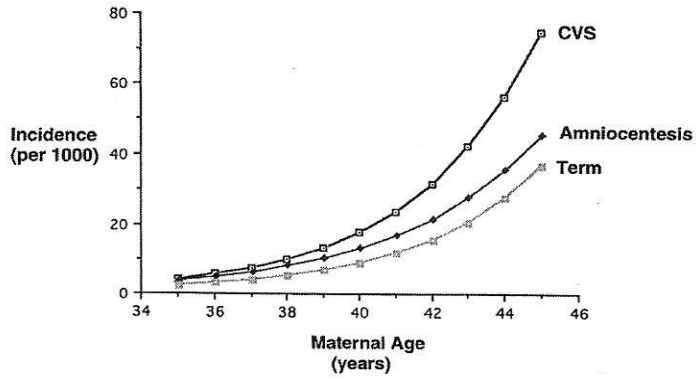
•DIAGNOSIS: THE KARYOTYPE

•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

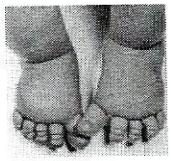
Epidemiology:

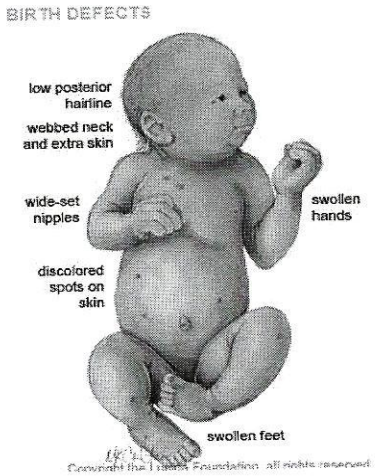
0.4 /1000 female births

(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.**



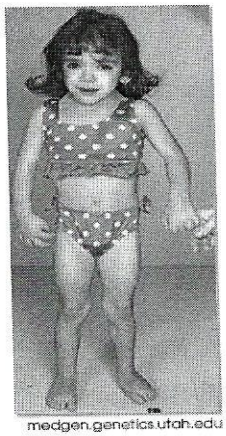


•small size (adult < 1,45 m).
•normal or subnormal intelligence
•Osteoporosis above 45 yrs.

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

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

•multiple pigmented nevi.



•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 physiqe
  - 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.**
  - **XXXY, XXXXY, XXYY: 10 %.**
  - **in mosaic: 5-10 % .**