Klinefelter syndrome

Genetics

-47,XXY and its variants 48,XXXY, 49,XXXXY, and 46XY/47,XXY mosaicism in male patients

-Klinefelter syndrome is not inherited

Clinical findings/Dysmorphic features

-Hypotonia; tall stature; slightly delayed motor and language skills; learning difficulties (better receptive language skills than expressive); reduced testosterone (plateaus age 14); small fibrosed testes; azoospermia and infertility; gynecomastia (enlarged breast tissue) increased cholesterol; higher risk of autoimmune disorders and mediastinal germ cell tumors (1% risk); increased risk of male breast cancer and type 2 diabetes

Etiology

-1 in 500 to 1,000 newborn boys

Genetic testing/diagnosis

-In some cases, features are so mild that it is not diagnosed until puberty or adulthood

-Karyotype/FISH

Other

-Maternal and paternal meiotic non-disjunction equally distributed in KS (nearly 50 % each)

-Additional maternal X chromosome: non-disjunction in either the first or second meiotic division is most likely to have occurred

-Additional paternal X: can only derive from a non-disjunction in the first meiotic division, since meiosis II error will result in either XX or YY gametes and therefore XXX or XYY zygotes