**XXY (Klinefelter syndrome): a pediatric quantitative brain magnetic resonance imaging case-control study.**


**Author information**

**Abstract**

**OBJECTIVE:** An extra X chromosome in males (XXY), known as Klinefelter syndrome, is associated with characteristic physical, cognitive, and behavioral features of variable severity. The objective of this study was to examine possible neuroanatomical substrates of these cognitive and behavioral features during childhood and adolescence.

**METHODS:** MRI brain scans were acquired for 42 XXY and 87 healthy XY age-matched control males. We compared these 2 groups on regional brain volumes and cortical thickness.

**RESULTS:** Total cerebral volume and all lobar volumes except parietal white matter were significantly smaller in the XXY group, whereas lateral-ventricle volume was larger. Consistent with the cognitive profile, the cortex was significantly thinner in the XXY group in left inferior frontal, temporal, and superior motor regions.

**CONCLUSION:** The brain-imaging findings of preferentially affected frontal, temporal, and motor regions and relative sparing of parietal regions are consistent with observed cognitive and behavioral strengths and weaknesses in XXY subjects.

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