DUPLICATION OF Xp22.3 DETECTED BY CGH-MICROARRAY INVESTIGATION


CLINICAL HISTORY

A 16 year old female was referred for cytogenetic studies presenting with:
- Mild dysmorphic facial features
- Seizures
- Developmental delay
- Autistic-like behaviors
- Eating disorder

METHODS

- High resolution karyotype analysis
  - GTW-banding
- Microarray studies
  - Spectral Genomics Constitutional Array 400
  - Spectral Chip 2600™
  - Same-sex control (Promega)
- Confirmatory interphase FISH studies
  - LSI STS (Xp22.3) DNA Probe (Vysis)

RESULTS

- Microarray studies revealed a duplication of 3 array clones in Xp22.31.
- A duplication of the STS region at Xp22.3 was confirmed by interphase FISH studies.
- Parental studies were requested.
  - The patient's father carried the same duplication at Xp22.3.
  - Patient's father has plantar and palmar hyperkeratosis, behavioral and anxiety problems.

SUMMARY

- Microdeletions of the STS region on Xp22.3 are associated with X-linked ichthyosis however, phenotypic findings for duplication are not well defined.
- Given the clinical similarities between the father and daughter, duplications of the STS gene region are most likely etiologically related to skin dryness and/or autistic-like behavior.
- One could also hypothesize that this may be due to an increased dosage effect of the STS gene (which, when there is a deficiency produces ichthyosis).
- Distinguishing benign copy number variations from a variation that influences a phenotype is an essential requisite when using CGH-microarray techniques.