Solid Tumour Section
Mini Review
**Prognosis**
Considered to have a poorer prognosis than the transitional cell carcinoma.

**Cytogenetics**

**Cytogenetics Morphological**
Highly complex karyotypes, yet poorly known. Allelic losses are frequent; the most frequent regions involved in loss of heterozygocity (LOH) are 3p, 8p, 9p, 9q, 17p; the karyotype is more complex in advanced grades/stages, as in transitional cell carcinoma.

Chromosome 7: trisomy 7 seems to be more frequent than in transitional cell carcinoma, and is found more often in advanced stages; unknown significance as +7 may also be found in normal tissues.

Chromosome 9: monosomy 9 is an early event and might even occur at dysplastic stages; allelic losses are frequent, mainly in 9p (65%), more often than for transitional cell carcinoma; LOH are found in particular in the locus where CDKN2/P16 sits; homozygous deletion of P16 is frequent (50%) and may also be found in squamous metaplasias from cancerous patients (but not in squamous metaplasias from non cancerous patients); trisomy 9, on the other hand, would be frequent in advance diseases.

Chromosome 17: P53 is often implicated, especially in high grades/stages; the profile of mutations of P53 is different from what is found in transitional cell carcinoma.

**Cytogenetics Molecular**
Comparative genomic hybridization (CGH) and multi-FISH (M-FISH) are complementary tools to determine respectively unbalanced segments and structural rearrangements in these complex karyotypes.

**Genes involved and proteins**

**Note**
Multistep process; largely unknown.

**References**

Wheeless LL, Reeder JE, Han R, O’Connell MJ, Frank IN, Cockett AT, Hopman AH. Bladder irrigation specimens assayed by fluorescence in situ hybridization to interphase nuclei. Cytometry. 1994 Dec 1;17(4):319-26


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