Atlas of Genetics and Cytogenetics
in Oncology and Haematology

OPEN ACCESS JOURNAL AT INIST-CNRS

Solid Tumour Section

Mini Review

Bladder cancer

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Published in Atlas Database: August 1997

Online version is available at: http://AtlasGeneticsOncology.org/Tumours/blad5001.html
DOI: 10.4267/2042/32037

Classification

Existence of different histologic types.
Very rare types are:
- Squamous cell carcinoma (5%);
- Adenocarcinoma (2%);
- The most frequent, representing 90-95 % of cases is transitional cell carcinoma of the bladder, herein described.

Clinics and pathology

Disease

Cancer of the urothelium

Epidemiology

Annual incidence: $250/10^6$, 2% of cancers, the fourth cancer in males, the seventh in females, 3M/1F; occurs mainly in the 6th-8th decades of life; risk factors: cigarette smoking and occupational exposure (aniline, benzidine, naphtylamine); 20 to 30 yrs latency after exposure.

Clinics

Hematuria, irritation.

Pathology

Grading and staging: tumours are:
- graded by the degree of cellular atypia (G0→ G3), and;
- staged: pTIS carcinoma in situ (but high grade), and pTa papillary carcinoma, both mucosally confined; pT1 lamina propria invasive; pT2 infiltrates the superficial muscle, and pT3a, the deep muscle; pT3b invasion into perivesical fat; pT4 extends into neighbouring structures and organs.

Treatment

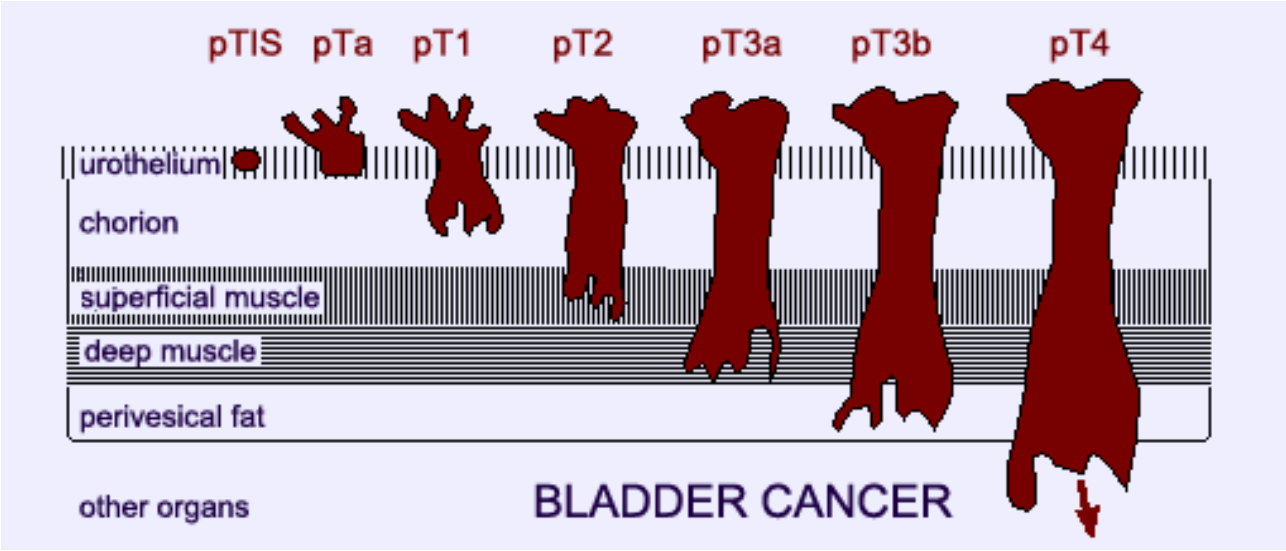
Resection (more or less extensive: electrofulguration → cystectomy); chemo and/or radiotherapy, BCG-therapy.

Evolution

Recurrence is highly frequent.

Prognosis

According to the stage and the grade; pTa is of good prognosis (> 90% are cured); prognosis is uncertain in pT1 and G2 tumours, where cytogenetic findings may be relevant prognostic indicators. 20% survival at 1 yr (stable at 3 yrs) is found in T4 cases; however, identification of individual patient's prognosis is often difficult, although of major concern for treatment decision and for follow up.



Cytogenetics

Cytogenetics, morphological

Highly complex and diverse, but non-random.

-9: monosomy 9 is frequent (about 50% of cases, and can be the only anomaly; found also in early stages; not associated with tumour progression; loss of heterozygocity (LOH): critical deletion segments are in 9p21 and somewhere in 9q; gensolin could be implicated.

-11 or del(11p): are frequent; associated with high stages and tumour progression.

del(17p) and LOH at 17p: also frequent; mainly found in pT2 to pT4; also found in a subset of pTIS, which might be a relevant indicator for these tumours with variable but often poor prognostic; the deletion involve P53.

del(13q) and Rb loss are corrrelated with the stage.

+7: often found, but the same occurs in a number of cancers of various origin; may have no pertinence, inasmuch as +7 has also been found in normal (i.e. non tumoural) cells!

Mar, aneuploidy, polyploidy, complex karyotypes: are bad prognostic features.

del(3p), del(5q) and i(5p), del(6q), del(8p), del(14q) and del(18q) are also consistantly found; these LOH point to probable tumour suppression genes, which could be implicated in tumour progression.

Cytogenetics, molecular

Interphase cytogenetics using whole chromosome paints/comparative genomic hybridization (CGH) should prove useful tools; flow cytometry for DNA index measurement has often been used, but appears to be a 'blind' method.

Genes involved and Proteins

Note: as the process is multistep, genes involved in transitional cell carcinoma of the bladder should be numerous; most are still unknown; some are quoted above.

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This article should be referenced as such:

Huret JL, Léonard C. Bladder cancer. Atlas Genet Cytogenet Oncol Haematol.1997;1(1):32-33.