6. Urinary Bladder Cancer

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Although the demonstration of elevated serum and/or urine levels of carcinoembryonic antigen (CEA) and tissue polypeptide antigen (TPA) may sometimes prove helpful in the follow-up of patients with urinary bladder cancer, no general marker of practical use for the diagnosis of this disease is presently available. Apart from a prognostic value assigned to the loss of blood group isoantigens (A, B, H) by tumorous tissue [1], the search for other and more specific bladder cancer markers has until recently met with little success. Since 1984 there have, however, been several reports on monoclonal antibodies recognizing tumor or differentiation antigens associated with this type of malignancy [2–8]. These antigens, some of which have been listed in table I, are characterized by their expression on a substantial part of bladder cancer specimens while lacking or present in nondetectable quantities on normal urothelium. Some of them are found, in addition, on a few distinct tissue types of nonurothelial origin (T138, JP165, 3G2-C6, 7E9 and S2C6) while

others have so far been exclusively found on bladder cancer cells (OM-5, G4, 4E8 and SK4H). Most of these antigens are glycoproteins with their major location on the cell surface where they can be readily detected by standard immunohistochemical staining methods. Whether these molecules are also released into serum or urine in sufficient quantities to allow detection by antigen/antibody-based radio- or enzyme immunoassays is presently not known, but much effort will be put into the development of such assays.

Another approach for which the monoclonal antibody reagents may prove of diagnostic value is in conjunction with the normal cytology of cells obtained from urine or from bladder washings. Preliminary data from Chopin et al. [10] as well as from our own group suggest that several of the antigens described can be detected on tumor cells collected in this manner.

None of the antigens so far identified were found to be expressed by all bladder tumors investigated. If and to what extent this heterogeneous expression can be correlated to differences in grade or malignancy of the tumors is as yet uncertain but the

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Table I. Characteristics of some bladder tumor-associated antigens

Antibody	Antigen	Tissue distribution	References
kilodaltons			

apparent preference of some of these antibodies, OM-5 and G4 for low- and high-grade tumors, respectively, suggests that this may be the case. Another implication of this observed

heterogenicity is that combinations of two or more antibodies will probably be required for the detection of optimal numbers of tumors.

In conclusion, and similar to what has been found for other types of tumors, there seems to exist a heterogeneous group of molecules with an expression more or less restricted to malignant urothelium. Although the detection of some of these antigens can potentially be used to complement other criteria in the diagnosis of bladder tumors from biopsies or bladder washings, their practical use largely remains to be established. So far, no data on the demonstration of these antigens in serum or urine are available.

References

Lange PH, Limas C, Fraley EE: J Urol 1978; 119: 52–55.

Fradet Y, Cordon-Cardo C, Thomson T, et al: Proc Natl Acad Sci USA 1984;81:224–228.

Messing EM, Bubbers JE, Whitmore KE, et al: J Urol 1984;132:167–172.

Mazuko T, Yagita H, Hashimoto Y: JNCI 1984; 72:523–530.

Young DA, Prout GR, Lin CW: Cancer Res 1985; 45:4439–4446.

Koho H, Paulie S, Ben-Aissa H, et al: Cancer Immunol Immunother 1984;17:165–172.

Ben-Aissa H, Paulie S, Koho H, et al: Br J Cancer 1985;52:65–72.

Ben-Aissa H, Paulie S, Koho H, et al: Anticancer Res 1986;6:165–170.

Paulie S, Ehlin-Henriksson B, Mellstedt H, et al: Cancer Immunol Immunother 1985;20:23–28.

10 Chopin DK, deKernion JB, Rosenthal DL, et al: J Urol 1985;134:260–265.