

nantly in the basal and Ki67 in the suprabasal layers. On the contrary, in high-grade cervical lesions, Ki67/p53 immunoreactive patterns were detected in the same basal-suprabasal area. An inverted correlation was also evident in the frequency of Ki67/p53 immunostaining reactivity in these high-grade lesions.

Inflammatory breast cancer

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Inflammatory breast cancer (IBC) is, fortunately, uncommon, accounting for 1–3% of cases of breast cancer. It is a unique clinical and pathological entity characterized by rapid disease progression and poor prognosis. There has been significant progress in the treatment of inflammatory breast cancer during the last two decades resulting in substantial improvements in local disease control and survival rates. Histopathologically IBC is characterized by plugging of dermal lymphatics with tumor emboli. Because this lesion usually does not form a discrete palpable mass, it is not as amenable to diagnosis by fine-needle aspiration as other breast lesions. Early attempts to control the disease with local treatment modalities alone had a minimal impact on survival. More recently, multimodality treatment approaches that integrate systemic chemotherapy, surgery, and radiotherapy, have resulted in local disease control and prolonged survival. We report our experiences with IBC and discuss the rise and fall of local therapy. We conclude that better systemic therapies need to be developed since metastatic disease develops in the majority of patients.

Avidin-Gold, a novel marker of sulfated glycosaminoglycans

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We have recently introduced a novel cytochemical ultrastructural approach for post-embedding localization of sulfated proteoglycans in mast cell secretory granules (1). The method is based on the use of a polycationic histochemical probe, cationic colloidal gold (CCG), consisting of a polylysine colloidal gold complex (2). In the present study we have tested a new histochemical probe, consisting of an egg-white avidin gold complex (AG), which, due to the basic properties of the avidin, constitutes an alternative post-embedding cationic

mucosa, adenoma and carcinoma at different grades of differentiation and in metastasis. We found that: (1) Apoptotic cells exist in most colonic adenomas, carcinomas and metastases, although larger numbers of apoptotic cells were observed in carcinoma. (2) Bc 12 is expressed relatively early on in colon carcinogenesis in adenomas. (3) p 53 is detected late in neoplastic progression only in carcinomas and metastases. Our results suggest that expression of Bc 12 early in adenoma, promotes subsequent genetic events in target cell populations with extended survival and gives them a stronger malignant potential. The presence of p 53 mutant relatively late in the neoplastic progression may correlate with increased tumor aggressiveness. The presence of large numbers of apoptotic cells in carcinoma appears to eliminate "weak cells" that were not altered by further genetic events.

The significance of the CA 15-3 breast tumor marker as an additional tool for detection of breast cancer

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Breast cancer is the leading type of cancer in women. One out of 10 women may develop breast cancer during her lifetime. A steady increase in the incidence of female breast cancer has been observed over a 20 year period. While the overall survival rate of cancer patients has improved in the last two decades, that of patients with breast cancer has remained unchanged. Breast cancer occurs at an incidence rate of 56.4 per 100,000 population. It is the main cause of mortality in women between the ages of 40–44 and is one of three main causes of death up to the age of 60 (27% of all malignant diseases in women). Disease Free Survival (DFS) in stages I–II for 5 years is 80% and for 10 years is 60%. Approximately 1,880 new patients are detected in Israel annually, with a mortality rate of 15 patients per 100,000 population. It is commonly accepted that the earlier the detection of the disease, the better the prognosis. Ability to detect the disease at an early stage should reduce the morbidity rates. In this study, three representative patients are reported in which CA 15-3 served as an additional tool in early detection of the disease, after physical examination and first mammography were negative.

C-ERB-B-2 expression in breast cancer

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C-erb-B-2 (HER-2/neu) protein is a 185 kD glycoprotein with similarities to the epidermal growth factor receptor. Both are trans-membrane proteins with intracytoplasmic

tyrokinase activities that are considered to have an essential influence on cell growth. Amplification of the c-erb-B-2 gene or protein expression has been reported in 10–40% of primary breast carcinomas. Several studies of primary breast carcinoma have suggested that c-erb-B-2 gene amplification, or expression of its protein, is associated with an unfavorable prognosis. Others have questioned its prognostic importance. Most reports deal with primary breast carcinomas and correlate c-erb-B-2 protein expression to well-known prognostic indicators such as stage, histologic grade, subtype, lymph node metastases, estrogen and progesterone receptors and DNA ploidy. In this study, 141 primary breast tumors were investigated for c-erb-B-2 protein expression by the immunoperoxidase method on formalin-fixed, paraffin embedded tissues. C-erb-B-2 oncoprotein was expressed in 50/141 patients (35%) and showed an intense membrane-associated staining of the tumor cells. 42 patients were evaluated histologically for additional parameters such as nuclear grade and mitotic activity and were correlated to more currently used prognostic factors and tumor markers including hormonal estrogen receptor status, CA 15-3 and CEA serum levels. High amplification of the c-erb-B-2 oncoprotein was well correlated in this study with high levels of serum CA 15-3 and CEA, suggesting progression of the disease, recurrence of malignancy and spreading of metastases.

Fertilization-induced changes in the egg and the zona pellucida

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The mammalian oocyte is surrounded by an extracellular coat, the zona pellucida (ZP), which plays an important role during fertilization. For all mammalian species studied, the ZP appears to be composed of only a few glycoproteins. It is widely accepted that carbohydrate residues serve as the ZP complementary receptors to the sperm. Fusion of the spermatozoon with the egg plasma membrane induces the exocytosis of cortical granules (CG reaction). This release of CG content alters the ZP glycoproteins preventing accessory sperm from penetrating through the ZP, thus establishing a block to polyspermy. The aim of our study was to follow the post-fertilization changes in the carbohydrate residues of the rat ZP. Zonae pellucidae surrounding oocytes were collected from ovulated oocytes (isolated from oviducts of immature females) and from fertilized eggs (isolated from oviducts of mated females). For localization of sugar residues, ZP were fixed in 2% formaldehyde, incubated with one of eleven different biotin-labeled lectins, washed and incubated with avidin-FITC complex and visualized with epifluorescent microscopy. For ultrastructural histochemistry, eggs were fixed with 2.5% glutaraldehyde and embedded in LR White resin. Ultrathin sections were stained with a complex of the lectin *Ricinus communis* (RCA-I) and colloidal gold and were examined by transmission electron microscopy. Of the eleven lectins examined, the pattern of RCA-I binding changed after sperm penetration. This binding showed considerable differences between ZP of ovulated and fertilized eggs. Most of the ovulated eggs examined showed homogenous binding throughout the entire thickness of the ZP. Only a minority of the eggs showed uneven binding – to the outer region, or to the inner and outer regions of the ZP. In fertilized eggs the opposite situation was observed – a minority of the eggs showed homogeneous binding, while the majority showed uneven binding. Our results demon-