MISCELLANEOUS TESTS:
SEROLOGY
GYN CYTOLOGY
OCCULT BLOOD
TUMOR ANTIGENS
ONCOGENES

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Markers of inflammation

- CRP is a surrogate for IL-6 and is elevated in inflammatory conditions. An elevated erythrocyte sedimentation rate may provide similar information
- Minor ANA and RA elevations simply reflect an acute inflammatory response.
- A negative ANA or RA excludes those diseases.

Markers of autoimmune disease

- A markedly elevated titer of ANA with positive dsDNA or anti-Sm is diagnostic of systemic lupus erythematosis.
- An elevated titer of ANA with the presence of anti-histone antibodies is noted in drug induced systemic lupus erythematosis.
- In Sjögren's syndrome, anti-Ssa and anti-SSb are present.
- Anti-Scl70 antibodies are present in diffuse scleroderma.
- Anti-centromere antibodies are present in CREST syndrome.

Markers of autoimmune disease

- Anti-Jo-1 present in dermatomyositis, polymyositis.
- An markedly elevated RA titer (>1:64) is compatible with a diagnosis of rheumatoid arthritis.
- Anti-citrulline antibodies are pathognomonic of rheumatoid arthritis.
- Anti-RNP antibodies in mixed connective tissue disease.

The routine Pap smear

- False negative rate is up to 20% and largely represents error sampling cervix.
- Screen sexually active women older than 21.
- Risk factors for cervical cancer include:
- First intercourse earlier than 18
- More than six sexual partners
- Oral contraceptive use for more than 10 years
- Screen no more frequently than every 2-3 years if significant dysplasia is not found.
- Screen throughout active sexual life; terminate screening at age 70 or following hysterectomy if not performed for cancer.

The routine Pap smear

- A negative liquid based Pap smear every 2 years until the age of 30 may then yield to less frequent screening (every 3 years) with concomitant HPV testing in patients at risk for HPV infection, not simply with condylomata.
- Terminate screening at age 70 or following hysterectomy if not performed for cancer.

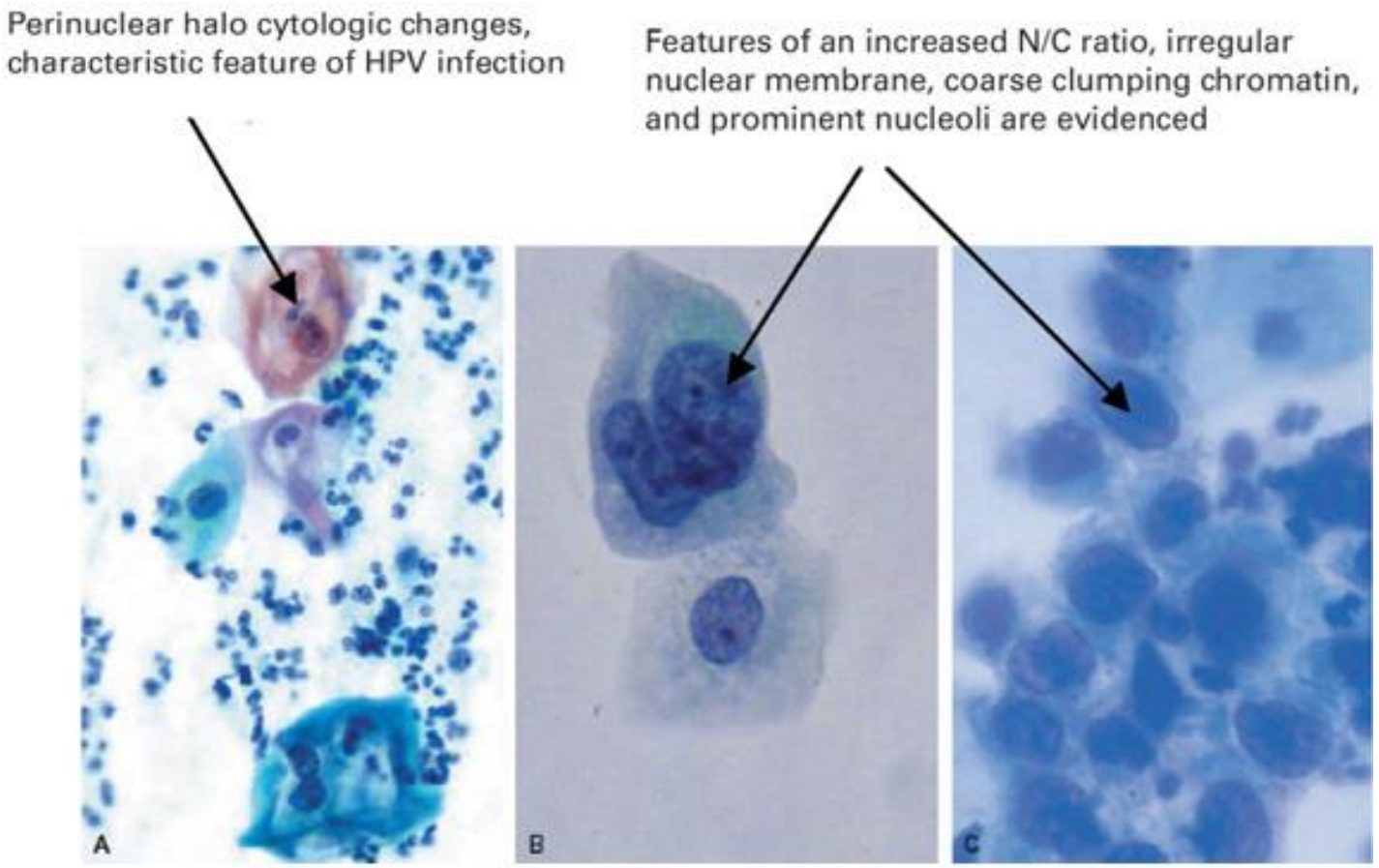
The routine Pap smear

- History of genital warts is not an indication for HPV testing as the HPV strains are not associated with cervical cancer.
- Screen only if dysplasia found.
- Partner with penile cancer or whose previous partner has had cervical cancer
- Cis-gender sexual activity transmits HPV
- Chlamydia screens are only for those less than 24 years of age or pregnant and at high risk

Pap smear

- Atypical squamous cells of uncertain significance [ASUS] may represent HPV infection if no other abnormality present. HPV determination is indicated.
- Absence of cells from transformation zone may reflect inadequate scraping of endocervical canal.
- Presence of endometrial cells in the Pap smear of a woman older than 40 not on hormone therapy requires further investigation.

Pap smear



Source: Kantarjian HM, Wolff RA, Koller CA: *MD Anderson Manual of Medical Oncology*: http://www.accessmedicine.com

Fig. 24-10 Accessed 02/01/2010

Screening for colon cancer

- Screen all asymptomatic patients >50yo.
- Screen earlier if first degree relative with colon cancer or polyps. Consider gene study.
- Immunochromatographic fecal occult blood test annually AND Flexible Sigmoidoscopy

  OR Double Contrast Barium Enema every 5 years.

  Six common fecal occult blood tests annually may be sufficient if the imunochromatographic method is not available. Methylated septin 9 as screen only if colonoscopy or barium enema refused by patient.
- Colonoscopy only for positive screens; repeat every 10 years if negative or if low grade adenomas completely resected.

Screening for prostate cancer

- There are no data suggesting survival improved through early screening.
- Currently, a PSA is drawn at 50 years of age. If <3.0, repeat every 3 years; If 3.00-4.99, repeat every year. 25% of men with normal levels will have cancer; however, only 2% of these will be high grade.
- Begin screening at 40 years of age if of Sub-Saharan origin or if first degree relative with prostate cancer. 44% of men will be over- diagnosed with these parameters.

Screening for prostate cancer

- If initial PSA <1.00 AND >65 years of age, repeat screening not necessary.
- 85% cancers curable if found when PSA <5.0
- PSA velocity >0.5ng/yr is an indication for biopsy as it is associated with increased risk of cancer death over a follow-up period of 10-15 years.
- For those patients with negative biopsies but rising PSA, consider genetic testing. It is unlikely the patient will consent to a second round of biopsies.
- Median lobe must be examined in repeat biopsy.

Other tumor antigens

- No tumor antigen is useful for screening.
- If the tumor antigen is not found at elevated levels when the primary tumor is still present, it is unlikely that measuring the level of that antigen following therapy will be productive as a means of detecting recurrence.
- CA 15-3 and CA 27.9 are of equal utility in breast cancer.
- CA 125 is of utility in ovarian cancer.
- CA 19-9 is of utility in pancreatic cancer.
- CEA is of utility in cancers of epithelial origin.

Important tumor suppressor genes

Gene	Chromosome	Function
Rb1	**13q14**	**When dephosphorylated, blocks transition from G1 to S [to G2, toM] by binding to and inhibiting transcription of E2F; downstream affector of abl**
p53	**17p13**	**Holds at G1/S checkpoint [bound to p21/cdk] ; at G2 [with 14-3-3s] if DNA damaged; induce apoptosis [bax, puma, noxa]**
WT1	**11p13**	**Zinc finger transcription factor**
APC1	**5q21**	**Binds β-catenins for ubiquination**
NF-1 **BRCA-1** **BRCA-2**	**17q11** **17q21** **13q12**	**Stimulates GTPase activity [p21]** **Blocks replication of damaged DNA** **Blocks replication of damaged DNA**

Important oncogenes

Functional Category	Oncogene	Mechanism	Tumor
Growth Factor	sis	overexpression	Astrocytoma
	int-2	amplification	Bladder
	hist-1	overexpression	Esophagous
Growth Factor Receptor	erb-B erb-B2 (neu)	overexpression amplification	Breast, Ovary Breast, Ovary
Signal Transduction	abl	t9,22	Chronic Myelogenous Leukemia
	ret	point mutation	Thyroid
	src		Sarcoma

Important oncogenes

Functional Category	Oncogene	Mechanism	Tumor
Transcription	**c-myc**	**overexpression**	**Leukemia, Breast**
	n-myc	**amplification**	**Neuroblastoma**
	L-myc	**amplification**	**Lung**
Cell Cycle Control	**bcl-1**		**Breast, Squamous cancer**
Apoptosis Block	**bcl-2**	**overexpression**	**B-cell Lymphoma**