Notes of Dr. Ravindra Goswami (IAS-2015, AIR-153)

Eckovation App Group Code: 873541

- Tumour
  - Pain
  - Intermittent hematuria
  - Soft mass

- Bone
  - Fracture
  - Pain
  - Secondary hypergammaglobulinemia

- Hematological

- Endovascular
  - HTN
  - Hyperscale
  - Anemia
  - Polycythemia

- Inv. X-ray
  - CT Scan
  - MR Scan
  - Venocavography
  - Tumor extent
  - Angiography
  - Neovascularisation

- Lab
  - Mixed density mass
  - Enhancement types contrast
  - Deep extension (Thrombus)

- Tilt
  - Radical nephrectomy
    - En bloc removal of whole Gerota's fascia & content
    - (Kidney, Proximal ureter, Adrenals)

- RVE
  - Thrombus extraction
  - Hemoglobin
  - Infrarenal

- Proximal control
  - Cardio pulmonary bypasses

- Neopenic sparing surgery for renal tumor
  - Split Bladder

- Evisceration - for palliation

- Immunotherapy - TNF, or IL-2

- Radiotherapy
- Arise from DCT\(^9\), can be multifocal and bilateral\(^9\).
- Typically hemorrhagic and cystic.
- Papillary carcinoma is the MC type of RCC in patients with dialysis associated cystic disease\(^9\).
- Composed of cuboidal and low columnar cells\(^9\).
- Psammoma bodies may be present.
- Chromophobe renal carcinoma:
  - Represent 5% of RCC, composed of cells with prominent cell membrane and eosinophilic cytoplasm with a halo around nucleus.
  - Relative transparent cytoplasm with a fine reticular pattern described as ‘Plant cell’ appearance.
  - Associated with best prognosis
    - These tumors exhibit multiple chromosome loss and extreme hypodiploidy\(^9\).
    - Loss of multiple chromosomes 1\(^9\), 2\(^9\), 6, 10, 13, 17, 21 and Y\(^9\).
  - Arises from intercalated cells of collecting duct\(^9\).
  - Composed of pale eosinophilic cells often with a perinuclear halo\(^9\).
  - Collecting duct bellini ducti carcinoma:
    - Rarest type of RCC\(^9\), composed of malignant cells enmeshed within a prominent fibrovascular stroma typically in medullary location.
    - Arise from collecting duct cells in the medulla\(^9\).
    - Has got very aggressive course\(^9\).
  - Remember: Medullary cell carcinoma is seen almost exclusively in association with sickle cell trait.

REMOVING CELL CARCINOMA

- MC type of RCC: Clear cell carcinoma\(^9\)
- MC type seen with dialysis associated cystic disease: Papillary carcinoma\(^9\)
- Exclusively associated with sickle cell trait: Medullary cell carcinoma\(^9\)
- Best prognosis: Chromophobe carcinoma\(^9\)

90. Ans. a. Mutated VHL gene is associated with clear cell carcinoma, c. Extreme hypodiploidy occurs
91. Ans. a. Clear cell type
92. Ans. a. Clear cell type
93. Ans. d. Monosomy of 1 and Y (-1, -Y) (Ref: Smith 17/e p330-336; Campbell 10/e p1419-1449; Bailey 25/e p1308-1311)
  - These tumors exhibit multiple chromosome loss and extreme hypodiploidy\(^9\).
  - Loss of multiple chromosomes 1\(^9\), 2\(^9\), 6, 10, 13, 17, 21 and Y\(^9\).

94. Ans. c. Von-Hippel Lindau (VHL) syndrome
95. Ans. a. PCT (Ref: Smith 17/e p330-336; Campbell 10/e p1419-1449; Bailey 25/e p1308-1311)

REMOVING CELL CARCINOMA CLINICAL FEATURES, PARANEOPLASTIC SYNDROMES

96. Ans. None (Ref: Smith 17/e p329-339; Campbell 10/e p1419-1491; Bailey 26/e p1304-1307, 25/e p1308-1311)

REMOVING CELL CARCINOMA (GRAVITZ TUMOR, HYPERNEPHROMA, INTERNIST’S TUMOR, RADIOLOGIST’S TUMOR)\(^9\)

- MC malignant tumor of adult kidney and most lethal\(^9\) of all malignancies
- More common in males, in 6th and 7th decade
- Majority are sporadic
- Hereditary variants are VHL syndrome, Hereditary clear cell carcinoma and Hereditary papillary carcinoma\(^9\)
- Tumor usually involve upper pole\(^9\)

Risk Factors

- Most significant risk factors are smoking and tobacco chewing\(^9\)
- Other risk factors are obesity, hypertension, exposure to Asbestos, petroleum products and cadmium, chronic renal failure (specially due to analgesic nephropathy)\(^9\)
Spread
- Characteristic feature of RCC is tendency to invade renal vein. Further extension produces a continuous cord of tumor in IVC and even in right side of heart.
- MC route is hematogenous.
- MC sites of distant metastasis are lungs (cannon ball deposits and pulsating secondaries), bone, liver, brain.
- Lymphatic spread occurs when tumor extends beyond renal capsule.

Notable features of RCC
- Encapsulated in spite of being malignant (Pseudocapsule).
- Spontaneous regression.
- Refractoriness to cytotoxic agents.
- Response to biological response modifiers (IL-2 and IFN-alpha).
- Prolonged period of stable disease.

Clinical Features
- Classical triad of gross hematuria, abdominal mass and pain is seen in 10% cases (Too late triad).
- MC and consistent presentation is hematuria.
- Other symptoms are fever, weight loss, malaise, acute non-reducing varicocele, lower limb edema due to IVC obstruction.

<table>
<thead>
<tr>
<th>RCC: Paraneoplastic Syndromes (20%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Raised ESR: MC paraneoplastic manifestation.</td>
</tr>
<tr>
<td>Hypercalceria:</td>
</tr>
<tr>
<td>Due to production of PTH-rp.</td>
</tr>
<tr>
<td>Only paraneoplastic syndrome in which medical therapies are proven useful.</td>
</tr>
<tr>
<td>Hypertension: (Renin production from tumor)</td>
</tr>
<tr>
<td>Polycythemia: (Erythropoietin production from tumor)</td>
</tr>
<tr>
<td>Staufer's syndrome:</td>
</tr>
<tr>
<td>Non-metastastic hepatic dysfunction due to raised IL-6 leading to increased ALP, PT and bilirubin.</td>
</tr>
<tr>
<td>Hepatic function normalizes after nephrectomy.</td>
</tr>
<tr>
<td>Others are: Cushing syndrome, hypoglycemia, anemia, gynecomastia, amenorhea.</td>
</tr>
</tbody>
</table>

Diagnosis
- Diagnostic IOC: CT (95% accurate).
- MRI is most accurate non-invasive investigation for detecting tumor thrombus in renal vein or IVC. Distinguishes tumor thrombus from bland thrombus.
- Inferior venacavogram is most sensitive and specific but invasive means to detect involvement of IVC.
- Renal arteriography is done before renal sparing surgery (partial nephrectomy), but 3-D helical CT is also sufficient.
- Specific plain X-ray finding is central calcification.
- FNAC is not routinely done in RCC, indications are:
  - Suspected secondaries.
  - Suspected lymphoma.
  - Clinical suspicion of renal abscess.
  - To prove pathological diagnosis in disseminated or unresectable disease.

97. Ans. c. More common in female
98. Ans. b. Lungs
99. Ans. a. Renal cell carcinoma
100. Ans. d. All
101. Ans. a. Seminoma testis, c. Hypernephroma
- Cannon-Ball pulmonary metastases are characteristic feature of RCC and testicular carcinoma. As a rule, RCC produces spherical or round cannon-ball metastases.

101. Ans. b. Renal cell carcinoma
102. Ans. d. Lower pole involvement
103. Ans. a. Invasion of renal vein means inoperability
104. Ans. d. Invasion of renal vein is contraindication for surgery. b. Associated with anemia and low ESR
105. Ans. c. More common in female
106. Ans. b. Hypertension
107. Ans. None
108. Ans. None, d. Cushing syndrome
109. Cushing syndrome is the least common among the given options.
110. Ans. a. Hematuria
111. Ans. c. Hematuria

**RENNAL CELL CARCINOMA DIAGNOSIS AND TREATMENT**

112. Ans. b. IVC involvement indicates inoperability (Ref: Smith 17/e p329-333; Campbell 10/e p1419-1491; Bailey26/e p1304-1307, 25/e p1308-1311)

**Prognostic factors**
- Pathologic stage is single most important prognostic factor
- Lymph node involvement is a poor prognostic factor

**Staging and grading**
- TNM (preferred) and Robson's staging are used for RCC.
- Fuhrman histological system is used for grading.

<table>
<thead>
<tr>
<th>Prognostic Factors</th>
<th>Localized RCC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pathologic stage</td>
<td>Chemotherapy and radiotherapy is not effective</td>
</tr>
<tr>
<td>Lymph node involvement</td>
<td>Patient with Staufer's syndrome are also candidate for radical nephrectomy</td>
</tr>
</tbody>
</table>

**Treatment**

- TOC is open radical nephrectomy

**Indications of nephron sparing surgery**
- Bilateral RCC or VHL syndrome
- RCC involving a solitary functioning kidney
- Unilateral carcinoma and a functioning opposite kidney affected by a condition that might threaten its future function (e.g. RAS)
- Low stage or ≤4 cm RCC at any location

**Locally Advanced and Metastatic RCC**
- Sunitinib is the first line treatment for metastatic RCC (response rate-31%)
- Combined IL-2 and IFN-alpha is the 2nd line treatment for metastatic RCC (response rate:15%)
- Chemotherapy with vinblastine, as it is single most effective agent
- Removal of thrombus should be considered in renal or IVC extension
- Radiotherapy for symptomatic bone metastasis

---

*Note: The above text is a summary and excludes some details for brevity.*
### 7th AJCC (2010) TNM Staging for Renal Cell Carcinoma

<table>
<thead>
<tr>
<th>Stage I</th>
<th>Stage II</th>
<th>Stage III</th>
<th>Stage IV</th>
</tr>
</thead>
<tbody>
<tr>
<td>T1 N0 M0</td>
<td>T2 N0 M0</td>
<td>T1a N1 M0</td>
<td>T4 any N M1</td>
</tr>
<tr>
<td>T1b N0 M0</td>
<td>T1a N1 M0</td>
<td>T1b N0-1 M0</td>
<td>Any T any N M1</td>
</tr>
</tbody>
</table>

**T1a:** Tumor ≤ 4 cm and confined to the kidney

**T1b:** Tumor >4 cm and ≤ 7.0 cm and confined to the kidney

**T2a:** Tumor >7 cm but ≤10 cm and confined to the kidney

**T2b:** Tumor >10 cm and confined to the kidney

**T3a:** Tumor grossly extends into renal vein or its segmental (muscle containing) branches, or tumor invades perirenal and/or renal sinus fat but not beyond Gerota’s fascia

**T3b:** Tumor grossly extends into vena cava below diaphragm

**T3c:** Tumor extends into the vena cava above the diaphragm or invades the wall of the vena cava

**T4:** Tumor invades beyond Gerota’s fascia (including contiguous extension into ipsilateral adrenal gland)

**N:** Regional lymph nodes

- **N0:** No regional lymph nodes metastasis
- **N1:** Metastasis in regional lymph node

**M:** Distant metastases

- **M0:** No distant metastasis
- **M1:** Distant metastasis present

---

**Notes of Dr. Ravindra Goswami (IAS-2015, AIR-153)**

113. Ans. d. Pathological staging

114. Ans. a. Partial nephrectomy

115. Ans. a. Radiosensitive

116. Ans. c. Right radical nephrectomy and left partial nephrectomy

117. Ans. a. Transperitoneal

118. Ans. c. Renal vein

119. Ans. b. Chromosome 3

120. Ans. a. Transitional cell carcinoma

121. Ans. c. Elevated ESR

122. Ans. a. Partial nephrectomy

123. Ans. c. Keeping fascia back in place (Ref: Smith 17/e p336; Campbell 10/e p1450)

- The prototypical concept of Radical nephrectomy encompasses the basic principles of early ligation of the renal artery and vein, removal of the kidney with primary dissection external to the Gerota’s fascia, excision of the ipsilateral adrenal gland and performance of a complete regional lymphadenectomy from the crus of the diaphragm to the aortic bifurcation.

- It has been well demonstrated that removal of the ipsilateral adrenal gland is not routinely necessary in the absence of radiographic adrenal enlargement unless the malignant lesion extensively involves the kidney, is locally advanced, or is located in the upper portion of the kidney immediately adjacent to the adrenal gland.

---

**Radical Nephrectomy**

- Radical nephrectomy is the primary treatment for localized RCC.
- Its goal is to achieve the removal of tumor and to take a wide margin of normal tissue.

Radical nephrectomy encompasses:

- Basic principles of early ligation of the renal artery and vein
- Removal of the kidney with primary dissection external to the Gerota’s fascia
- Excision of the ipsilateral adrenal gland
- Performance of a complete regional lymphadenectomy from the crus of the diaphragm to the aortic bifurcation.
Sx (BPH)
Indication

- Acute retention
- Residual urine >200mL

- Disturbing life cycles
- Complications
  - Hematuria
  - Hemorrhoids
  - Calculus
  - Vesicoureteric reflux

1. TURP
   - Tech: Resectoscope → irrigation under a gynecologic resection
   - Advantages
     - Smooth recovery
     - Rarely: incontinence

   - Disadvantages
     - TURP Syndrome
     - Water intoxication
     - Lithotomy in case of stone

2. Transvesicle suprapubic prostatectomy
   - Reserved for >100 gms prostate and stones
   - Blind resection, chance of haemorrhage

3. Retroperitoneal prostatectomy
4. Percutaneous prostatectomy

Newer: Holmium Yag Laser
- Starting for unfit patients.
Management of BPH
- Lifestyle change
  - Limit beverage consumption at night
  - Active life
  - Decrease caffeine and alcohol
- α blockers: Alphazosin or Terazosin
- 5α-reductase inhibitor
- [Ur]t - Placing implant in prostate to maintain the flow.
- TURP
- Green light pvr laser = Laser vaporisation of tissue
- Thermotherapy = Delivery of microwave energy through catheter
- Pulse electromagnetic frequency = Under Inv
- Symptom = Rest
- A little bit of Gyan on Benefits from common sense
Radical Prostatectomy + Radical Radiotherapy
Pelvic LNT + Prostate + Seminal vesicles + distal Spring perineal
Trans anorectotomy urethra to neck
CST: Impotence + stress and incontinence
* Mets should be excluded by bone scan, as this is alone for only 10% of survivor

3 approaches combined
1. Antrogen Abolition
2. Drugs
   - Still bestrol
   - Oral orchidectomy
3. Local Radiotherapy

For localized bone mets (Pain relief)
- Phosphorylated DES at low systemic toxicity
- For generalised mets
  - Hemibody irradiation
- For TURP detected
  - Local Radiotherapy for Prostatic scar
- For rectally aneuralrectal
### Treatment of CA Prostate

<table>
<thead>
<tr>
<th>Grade</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>T1a</strong></td>
<td>Incidentally found tumors at TURP, by definition low volume (≤5%), usually well differentiated associated with very slow growth rate. Managed by watchful waiting (Regular follow up with DRE and PSA)³.</td>
</tr>
<tr>
<td><strong>T1b, T1c and T2</strong></td>
<td>Management depends on patient’s age, life expectancy, performance status and patient’s preference. In younger, fitter men (&lt;70 years): Radical prostatectomy⁴ or radiotherapy⁵, if surgery is contraindicated. Elderly (&gt;70 years) with life expectancy &lt;10 years: Watchful waiting⁶ (Progress rate is very slow, 70% at 10 years).</td>
</tr>
<tr>
<td><strong>Advanced disease (T3, T4 or any metastasis)</strong></td>
<td>Palliative treatment, androgen ablation or palliative radiotherapy. Androgen ablation (hormone therapy) is first line of treatment: Orchiectomy + Flutamide or LHRH. Fluoramide⁷, palliative radiotherapy⁸.</td>
</tr>
</tbody>
</table>

New Drugs in metastatic, castration resistant CA Prostate

Cabazitaxel and Sipuleucel-T.²
25. Ans. d. Water intoxication
26. Ans. d. Hyponatremia
27. Ans. a. Hyponatremia
28. Ans. c. 1,2 and 4
29. Ans. a. 1.5% glycine

Carcinoma Prostate

30. Ans. a. Peripheral zone (Ref: Smith 17/e p355-169; Campbell 10/e p2715-2740; Bailey 26/e p1351-1356, 25/e p1354-1357)

Prostate Cancer

- MC cancer of males, MC cause of bone secondaries
- African-American men have highest incidence, less common in Asians
- Best screening protocol for CA prostate: PSA + DRE?

Risk Factors
- Advanced age and increased fat intake increase the risk
- Lycopene, Vitamin A and E and selenium decrease the risk
- MC genetic alteration in CA prostate is hypermethylation of glutathione transferase (GSTP-1) gene promoter located on chromosome 11q.

Pathology
- MC type is adenocarcinoma
- Prostatic adenocarcinoma are often multifocal and heterogeneous
- It is often accompanied by pre-malignant lesion PIN (prostatic intra-epithelial neoplasia)

- Neoplastic glands are smaller, more crowded and lack branching and papillary infoldings.
- Diagnosis of CA prostate based on absence of basal cell layer.

- Basal cell layer is present in normal glands, BPH glands and the precursor lesions of CA prostate.
- Site: Peripheral zone- 75%, Transition zone- 15%, Central zone- 10%

Spread
- Spread occurs by direct local invasion and through hematogenous and lymphatics
- Local invasion most commonly involves seminal vesicles and base of bladder

- Hematogenous spread occurs mostly to bone (axial skeleton is MC site with lumbar spine being most frequently implicated) forming osteoblastic secondaries
- Visceral metastasis most commonly involve lungs> liver> adrenal glands
- Lymphatic metastasis are most often identified in obturator nodes

- CNS involvement is usually a result of direct extension from skull metastasis

Clinical Features
- Most patients with early-stage CA prostate are asymptomatic, being peripheral.
- Presence of symptoms suggest locally advanced or metastatic disease
- DRE: Hard, irregular, nodular prostate with median sulcus obliteration

Complications of TURP

- Perforation of the bladder or the prostatic capsule can occur at the time of transurethral surgery.
- This usually occurs from a combination of inexperience in association with a large prostate or heavy blood loss.
- A large perforation with marked extravasation may require the insertion of a small suprapubic drain.
- If not detected, it may present post-operatively after the effect of spinal anesthesia, as suprapubic pain.
Notes of Dr. Ravindra Goswami (IAS-2015, AIR-153)

Eckovation App
Group Code: 873541

TURP AND COMPLICATIONS

15. Ans. c. Systematic prostate biopsy in suspected prostate cancer (Ref: Rumack’s Diagnostic Ultrasound 3/e p411)

Uses of TRUS in CA prostate
- To guide biopsy
- To guide therapy

Androgen Inhibitors (Antiandrogens)
- Flutamide, enzalutamide and bicalutamide bind to androgen receptor and inhibit the actions of androgens. These are thus effective for the treatment of prostatic carcinoma. These are used along with gonadotropin releasing hormone agonists. This strategy is known as complete androgen blockade. Flutamide can cause hot flushes, hepatic dysfunction and gynaecomastia.

Gonadotropin Releasing Hormone (GnRH) Agonists
- Goserelin, nalaxone, and leuprolide act as agonists of LHRH. Continuous administration of these agents lead to transient release of LH and FSH (and thus flaring up of symptoms in prostatic carcinoma) followed by inhibition of release of gonadotropins. These are indicated in the management of advanced prostatic carcinoma. Main adverse effects include transient flaring up of disease, hot flushes, impotence, gynaecomastia and osteoporosis.

SRSH Antagonists
- Cetrorelix, ganirelix and abarelix are the antagonists of LHRH. These drugs decrease release of gonadotropins without causing initial stimulation. These can be used in the treatment of prostatic carcinoma without the risk of flare up reaction.
• Its use without DRE is not recommended as 25% of men with CA prostate have PSA levels <4 ng/ml.
• Best use of PSA is monitoring after radical prostatectomy.

<table>
<thead>
<tr>
<th>PSA Density</th>
<th>PSA related Investigations</th>
<th>Free PSA</th>
</tr>
</thead>
<tbody>
<tr>
<td>• PSA/Prostate volume</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• PSA Prostate biopsy assuming yes recommended</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Rate of change of PSA per year</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• ≥0.75 ng/ml/year indicates carcinoma</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Assessment at every 18 months</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Free PSA (in %) appears to be most useful in distinguishing between those with and without CA prostate when total PSA levels fall in the range of 4-10 ng/ml</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Prostate Specific Antigen (PSA)</th>
<th>Increased PSA</th>
<th>Decreased PSA</th>
</tr>
</thead>
<tbody>
<tr>
<td>• CA prostate⁰, BPH³</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Acute prostatitis, Chronic prostatitis³</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Prostatic abscess⁰</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Catheterization, Cystoscopy⁰</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Prostatic biopsy⁰ (TRUS)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• DRE⁰, Sexual intercourse</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Castration⁰</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Anti-androgen therapy⁰</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Radiotherapy or chemotherapy⁰ for CA prostate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Radical prostatectomy⁰</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

35. Ans. b. Prostate specific antigen
36. Ans. a. DRE, d. PSA
37. Ans. b. MRI, c. CT scan, d. DSA
38. Ans. c. DRE+ PSA
39. Ans. a. Taking guided biopsy
40. Ans. a. Obturator nodes

<table>
<thead>
<tr>
<th>Most Common Lymph Nodes Involved</th>
</tr>
</thead>
<tbody>
<tr>
<td>CA Penis</td>
</tr>
<tr>
<td>Inguinal LN⁰</td>
</tr>
<tr>
<td>CA Testis</td>
</tr>
<tr>
<td>On right: Inter-aortocaval⁰ LN</td>
</tr>
<tr>
<td>On left: Paraortic⁰ LN</td>
</tr>
<tr>
<td>CA Bladder</td>
</tr>
<tr>
<td>Obturator² LN</td>
</tr>
<tr>
<td>CA Prostate</td>
</tr>
<tr>
<td>Obturator² LN</td>
</tr>
</tbody>
</table>

41. Ans. a. Because valveless communication exist with Batson's periprostatic plexus
42. Ans. a. Bone
43. Ans. e. Acid phosphatase
44. Ans. b. Prostate specific antigen
45. Ans. a. <4 ng/ml
46. Ans. a. Prostate cancer
47. Ans. a. Digital screening along with PSA is additive
48. Ans. c. Obturator nodes are most commonly involved
49. Ans. b. Scores range from 1-10 (Ref: Smith 17/e p357-358, Bailey 26/e p132)

Gleason score ranges from 2 to 10.

**Gleason Score and Grading System**

- Gleason score is the MC used histological grading system for prostate cancer.
- The two most predominant histological patterns of the prostate cancer are assigned a Gleason grade ranging from 1-5.

*Notes of Dr. Ravindra Goswami (IAS-2015, AIR-153)*

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Laboratory Findings
- Anemia (bladder or prostate) and/or metastatic disease, raised ALP in bony metastasis.
- PSA velocity > 0.75 ng/ml/yr indicates carcinoma.

Prostate Biopsy
- TRUS-guided biopsy is done in patients with abnormal DRE or elevated PSA or both.
- Differentiation of tumor is graded by Gleason score. A sum of 7 or more suggests an aggressive cancer.

Imaging
- TRUS is used for staging. Most lesions are hypoechoic.

Endorectal MRI in CA Prostate
- Most optimal imaging to appreciate the prostate anatomy.
- Prostate cancer is associated with lower levels of citrate and higher levels of choline and creatinine compared to BPH or normal tissues.
- The combined information provided by MRI and MR spectroscopy (for detection of citrate) may allow for a more accurate assessment of cancer location and stage.

Axial Imaging in CA Prostate
- CT scan is mainly used to detect LN metastasis.
- Intravenous administration of superparamagnetic nanoparticles, which gain access to lymph nodes by means of interstitial-lymphatic fluid transport, at the time of high resolution MRI, appears to improve visualization of small nodal metastasis.

Bone Scan
- Patients with PSA ≥ 15 ng/ml or greater, locally advanced disease (T3b, T4) are at higher risk for bone metastasis, and should be considered for bone scan.

Tumor MARKERS OF CA PROSTATE (APART FROM PSA)
- Prostatic acid phosphatase:
  - PAP activity is 1000 fold greater in the prostate than any other tissue.
  - PAP is not prostate specific and detectable levels are noted after prostatectomy.
  - Increased in renal, liver and bony malignancies.
- Alkaline phosphatase:
  - Raised in liver involvement or bony metastasis.
- Alpha-methyl co-A racemase.
- Hepsin.
- DD3.

Prostate Specific Antigen (PSA)
- It is a glycoprotein, serine protease.
- Free: 10-40%; Complexed to antiprotease: 60-90%.
- Formed in prostate, secreted in seminal fluid.
- Causes liquefaction of seminal coagulum.
- Normal value: ≤ 4 ng/ml (in > 50 years); Value > 20 ng/ml is diagnostic of CA prostate.
- PSA is the single test with highest positive predictive value for CA prostate.
- PSA is prostate specific, not the cancer specific.
- Level of PSA is directly related to tumor burden.
A morality is being rejected and sectional in nature makes it difficult to follow due to multiple factors.

It may sometimes go against the immediate material benefits of the agent. For example, freshening a pond pulse to the owner or switching to the costlier cleaner fuel for environmental justice.

For India, this statement forms the basis of climate change negotiations at one end on cost front and this is CBDR.

On the other end, morality being private affair is also a true and valid statement to certain extent. For example, some may eat non-vegetarian food on moral ground of being it nutrition rich (protein) food while others may renounce it on pretext of morality values of non-veg.
Liver Abscess

Fungal Abscess

Amebic Abscess

Complications of Liver Abscess

Sepsis

Rupture of Pleura

Rupture of Pecoitonitis

Encophasitis

K. Pneumoniae
Amoebic liver abscess

- Pain, vomiting, temperature
- Jaundice, rigors
- Excruciating pain (to back)
- Gray, tender, crinkled

Acute cholecystitis

- Subdiaphragmatic abscess
- Pain radiating to shoulder

Pyogenic liver abscess
- Tender, hepatomegaly
- Low grade fever
- Abdominal discomfort

S/F of Amoebic liver abscess:
- Malaise
- Severe pain in right hypochondriac (Amoebic Hepat)
- There may or may not be any abscess at USG only several microabscess may be there
- At this stage low grade fever, amoebic 
  weakness

- High grade fever, chills and rigors
- Amoebic symptom - Cough, shoulder pain.

Abdominal Sign - Tender, hepatomegaly, Re upper quadrat pain

Intercostal tenderness

Peritonitis
1. Total WBC count
2. Stool examination - for ova and cyst of E. histolytica
3. Serological test - Indirect Hem. Test
4. Sceereiup test - On deep breath, immobility of diaphragm
5. Sigmoidoscopy - flask shaped ulcer
6. Abdominal USG - Both ax and therapeutic aspiration and therapeutic

CT scan

T/t

Conservative

- During amoebic hepatitis
  - Tab. MTR 800 mg TDS
  - Par entery BFN
  - Majority

USG Needle aspiration

- During abscess stage
  - Before BT, CT and Inj. Vit. K

Sx

Failed USG aspiration

Ruptured abscess c. Peritonitis

- Laparotomy
- evacuation of abscess
- Drainage
- Peritoneal catheter
- Malecot's catheter

Complication - Peritonitis, pleural effusion
- Bronchopleural fistula, pericardial effusion
LIVER ABSCESS

1. Ans. b, Staph, aureus (Ref. Sabiston 19/e p1440-1444; Schwartz 9/e p1115; Bailey 26/e p1080, 25/e p1094; Blumgart 5/e p1006-1015-1017)

Pyogenic Liver Abscess in Children
- In children, Staphylococcus PLA is most common
- Occurs in the setting of chronic granulomatous disease, disorder of granulocyte function and hematologic malignancies.
- In chronic granulomatous conditions, abscess are dense and thick, early excision and treatment with antibiotics against Staphylococcus aureus is recommended

LIVER is MC site of abdominal visceral abscess
- PLA accounts for majority of hepatic abscesses
- Higher incidence of cryptogenic abscess occur in Asian series
- No significant gender, ethnic or geographic differences in disease frequency
- Associated comorbid conditions: Cirrhosis, CRF, history of malignancy

*E. coli*  [MC in Western countries]
*Klebsiella pneumoniae*  [MC in Asian countries]
*Staphylococcus*  [MC in children, suffering from chronic granulomatous disease]

- Multiple abscesses: patients with a biliary origin
- Solitary abscesses are more likely than multiple abscesses to be polymicrobial

Routes of Infection in PLA
- Biliary tract (MC)
  - CBD stones leading to cholangitits (in Asia)
  - Cholangiocarcinoma in western countries
  - CBD strictures
  - Portal vein (2nd MC)
- Hepatic artery
  - Hematogenous spread, usually monomicrobial, staphylococcus or streptococcus
- Direct extension:
  - From subdiaphragmatic abscess
  - From empyema in chest
  - Penetrating or blunt trauma
- Cryptogenic

Clinical Features
- MC presenting symptom is fever
- The MC LFT abnormality is an elevation of ALP
- Classic Presentation: Fever, jaundice (25%), and right upper quadrant pain and tenderness
- Fever, chills, and abdominal pain are the most common presenting symptoms
- Usually single, involve right lobe
- Malignancy, jaundice, deranged LFT and sepsis are associated with poor prognosis

Endogenous Endophthalmitis in PLA
- A rare complication specific to *Klebsiella* hepatic abscesses
- Occurring in 3% of cases
Notes of Dr. Ravindra Goswami (IAS-2015, AIR-153)

Eckovation App
Group Code: 873541

Section 2: Hepatobiliary Pancreatic Surgery

128

- More common in diabetic patients.
- Early diagnosis and treatment represent the best chance to preserve visual function.

**Diagnosis**
- USG and CT are the main diagnostic modalities.
- Diagnosis is confirmed by aspiration and culture.
- CXR: Elevated hemidiaphragm, right sided pleural effusion or atelectasis.

**Treatment**
- Percutaneous catheter drainage + IV antibiotics has become the treatment of choice.
- After 2 weeks of parenteral antibiotics, oral agents should be used for further 4 weeks.

2. Ans. a. E. coli
3. Ans. b. Biliary
4. Ans. a. Biliary tree
5. Ans. d. Percutaneous drainage is least cured


**Amebic Liver Abscess**
- Caused by Entamoeba histolytica whose cysts are acquired through the feco-oral route.
- Trophozoites reach the liver through portal venous system.
- Solitary and more common in right lobe of liver.
- Low incidence of invasive amebiasis in menstruating women.
- Majority of patients are young men (may be due to heavy alcohol consumption).

**Pathogenesis**
- MC form of invasive disease is colitis, frequently affects the cecum and ascending colon.
- In-ref: Flask-shaped ulcers (MC site: Cecum and ascending colon).
- Synchronous hepatic abscess is found in one third of patients with acute amebic colitis.

**Clinical Features**
- MC symptom: Abdominal pain.
- Typical clinical picture: Patient of 20-40 yrs of age, with history of travel to endemic area, presents with fever, chills, anorexia, right upper quadrant pain.
- Results from an obligatory colonial infection, a recent history of diarrhea are uncommon.
- Active colitis and amebic liver abscess rarely occur simultaneously, as a rule colonic lesions are silent.
- Rundness is rare.
- Raised PT is MC LFT abnormality.

**Diagnosis**
- USG and CT are the main diagnostic modalities.
- Diagnosis is confirmed by serological tests (ELISA) for antiamoebic antibodies.
- Cultures of amebic abscess are usually sterile or negative.
- CXR: Elevated hemidiaphragm, right sided pleural effusion or atelectasis.
- H/A: reddish-brown anchovy paste, more reliable characteristic than color is the odour of the fluid.

**Treatment**
- Metronidazole (750 mg orally TDS X 10-14 days) is the mainstay of treatment and is curative in over 90% of patients, clinical improvement is seen within 3 days.
- Luminal agents include bismuth subcitrate, paromomycin and diloxanide furoate.
- The average time to radiologic resolution of abscess is 3-9 months.