Effects of tumors on the host can be:

- **Local effects:**
  - Effects due to location and size of the tumor:
    - Pituitary adenomas compress the normal pituitary gland resulting in hypopituitarism (reduced secretion of pituitary hormones).
    - Bile duct tumors result in obstructive jaundice.
    - Renal artery leiomyoma results in hypertension.
  - Effects due to ulceration through surface epithelium:
    - *Gastrointestinal tumors result in bleeding in the form of:*
      - Melena (black stool due to the presence of blood).
      - Hematemesis (blood in the vomit).
    - *Lung cancer:*
      - Hemoptysis (coughing blood).
    - *Cancer of urinary bladder and ureter:*
      - Hematuria (blood in urine).

- **Systemic effects:**
  - Secreted products: hormone synthesis
    - *Pancreas:*
      - Insulin-secreting tumors result in hypoglycemia (reduced blood glucose level).
    - *Adrenal cortical tumors (tumors in the cortex of adrenal glands):*
      - Secretion of corticosteroids or aldosterone.
      - More common with well-differentiated benign tumors.
  - Cancer cachexia (wasting of muscles):
    - *Definition:*
      - It is a complex syndrome which includes the following:
        - Weight loss.
        - Lipolysis.
        - Loss of muscle and visceral protein.
        - Anorexia.
        - Chronic nausea.
        - Anemia.
        - Weakness.
    - *Pathogenesis:*
      - Tumor cells and macrophages which surround them increase TNF thus basal metabolic rate remains high despite reduced food intake.
  - Paraneoplastic syndromes:
    - *Definition:*
      - These are clinical syndrome involving non-metastatic systemic effects that accompany malignant diseases.
    - *They are mediated by:*
      - Humoral factors (hormones or cytokines) secreted by tumor cells.
      - Immune response against the tumor.
    - *Paraneoplastic syndromes might be:*
      - Earliest manifestation of an occult tumor.
Clinically significant problems.
Confused with metastatic disease.
Symptoms may be endocrine, neuromuscular, musculoskeletal, cardiovascular, cutaneous, hematologic, gastrointestinal, renal or miscellaneous.

- **Hypercalcemia (increased calcium level in the blood): due to**
  - Para-Thyroid Hormone related Protein (PTHrP): this is secreted in renal cell carcinoma, breast cancer and T-cell leukemia/lymphomas.
  - Osteoclast activating factor: secreted in multiple myeloma (MM).

- **Production of hormones/bioactive substances:**
  - Lung cancer:
    - ACTH (Adrenocorticotropic Hormone): Cushing syndrome.
    - ADH (Antidiuretic Hormone): hyponatremia.
    - PTH (Parathyroid Hormone): hypercalcemia.
    - Miscellaneous: hCG (human Chorionic Gonadotropin) and serotonin.

- **Hypercoagulability:**
  - Thrombosis is seen with pancreatic, mucin-secreting GIT and lung cancers.
  - Non-bacterial thrombotic endocarditis: platelet-fibrin thrombi on cardiac valves.

- **Clubbing of fingers; hypertrophic osteoarthropathy:**
  - Seen with lung cancer for unknown reasons.

- **Dermatologic disorders:**
  - Acanthosis nigricans:
    - Brown-black poorly defined, velvety hyperpigmentation of the skin.
    - Caused by secretion of EGF that stimulates epidermal keratinocytes and dermal fibroblast proliferation.
    - Seen with gastric, lung and uterine cancers.
  - Dermatomyositis:
    - Symmetric, proximal muscle weakness.
    - Seen with lung and breast cancers.