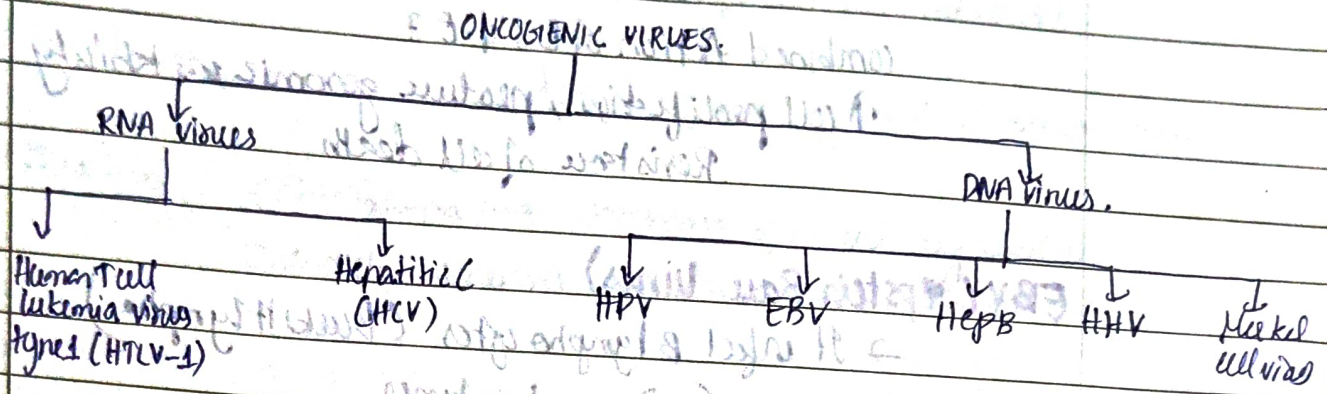


MICROBIAL CARCINOGENESIS

→ Virus that cause tumor are called oncogenic viruses:



Oncogenic RNA virus:

→ Human T-cell leukemia (HTLV-1)

MOI Infection → sexual, blood products, breast feeding

MOA: → infect CD4+ T cells.

→ It lead to proliferation of CD4 T cell & ↑ Risk of developing mutations of genomic instability.

↓
Accumulation of Mutation of chromosome

→ Abnormalities eventually leads to monoclonal neoplastic syndrome.

Oncogenic DNA virus:

HPV (Human Papillomavirus)

→ They infect only the immature squamous cells but its Replication occurs in the maturing, nonproliferative squamous cells.

MOA: Product of two viral genes E6 & E7.

Activation of E6 → Inhibition of P53 (Tumor suppressor gene).

→ Telomerase expression.

Activation of E7 → cell cycle progression (by inactivating RB protein)

- Inactivation of CDK inhibitors (part of the cell cycle)
→ progression of cell cycle



combined Action of E6 & E7

↑ cell proliferation, produce genomic instability
Resistance of cell death

EBV (Epstein Barr Virus)

→ It infect B lymphocytes (B-cell lymphoma)

lytic

productive

two types

Latent

occurs

→ only in few patients

→ death of infected cell

↓ Release of virus

↓ This virus
infected other
cells.

occurs in most cases

Result is immortalization

of B lymphocytes is the hallmark
of EBV.

Molecular Basis of immortalization of B cells Related to two EBV-coded genes:

1) LMP1 → Act as an oncogene promote B cell proliferation & survival

2) EBNA-2 stimulate transcription of many host genes

Mechanism of Burkitt lymphoma: B cell neoplasia

↓
most common childhood tumor
in central Africa

→ Normally B cells & stimulate B lymphocyte proliferation which is controlled by suppressor cell.

Other Microbial Carcinogens:

Bacteria:

H. pylori → peptic ulcers, gastric Adenocarcinoma, gastric lymphomas

Fungi → produce toxic substance like Aflatoxin B₁ produced by

↓
Aspergillus flavus → hepatocellular carcinoma

Parasites: Schistosoma → carcinoma of the urinary bladder
Clonorchis sinensis → Adenocarcinoma of bile ducts

↓
The impact of microbial factors

↓
A majority of human
cancers are linked to the action of
microbes & their products

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Microbes act as co-carcinogens. It promotes the growth of tumours
induced by carcinogens

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