

MAREK'S DISEASE



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MAREK'S DISEASE

Definition

Marek's disease (M D) is a lymphoproliferative disease of chickens caused by a herpes virus. It is characterized by a mononuclear infiltration of the peripheral nervous system, and the virus attacks nerves and causes paralysis of a limb or the neck and wide spread tumor formation

The disease was first described by 'Jozsef Marek'. whom it is named Marek's disease(M D) .

synonyms

Neural Lymphomatosis

Fowl Paralysis

Range Paralysis

Polyneuritis

Avian reticulosis

Etiology

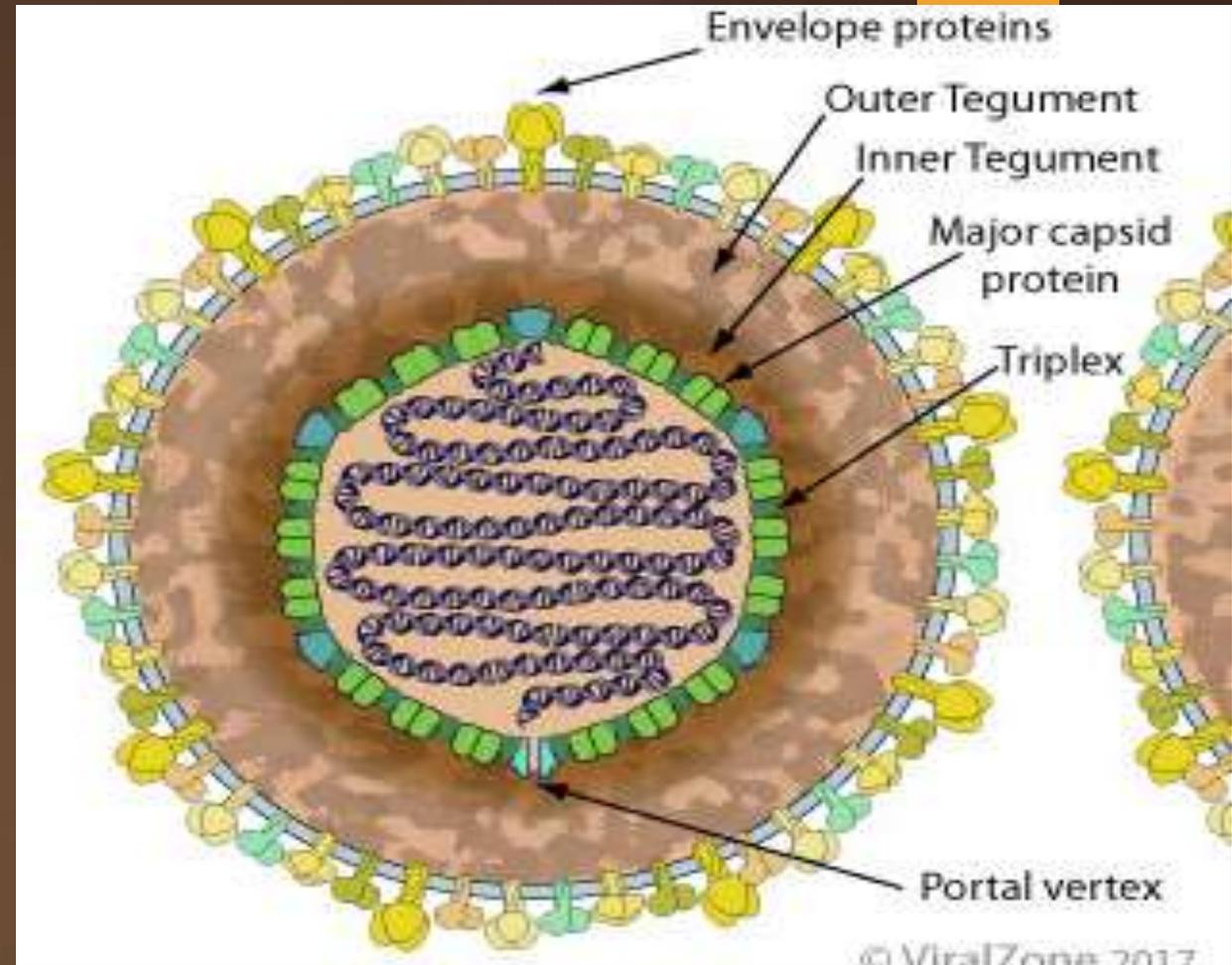
M D is caused by ***Gallid herpesvirus 2 (GaHV-2)***

It is an enveloped DNA virus.

Marek's disease virus (MDV) is a linear double stranded molecule (ds-DNA).

The MDV & related herpes viruses have been classified into **three serotypes**.

Serotype -1, serotype -2 ,& serotype -3



Serotype - 1



Virulence or oncogenic

serotype -2 ,& serotype -3



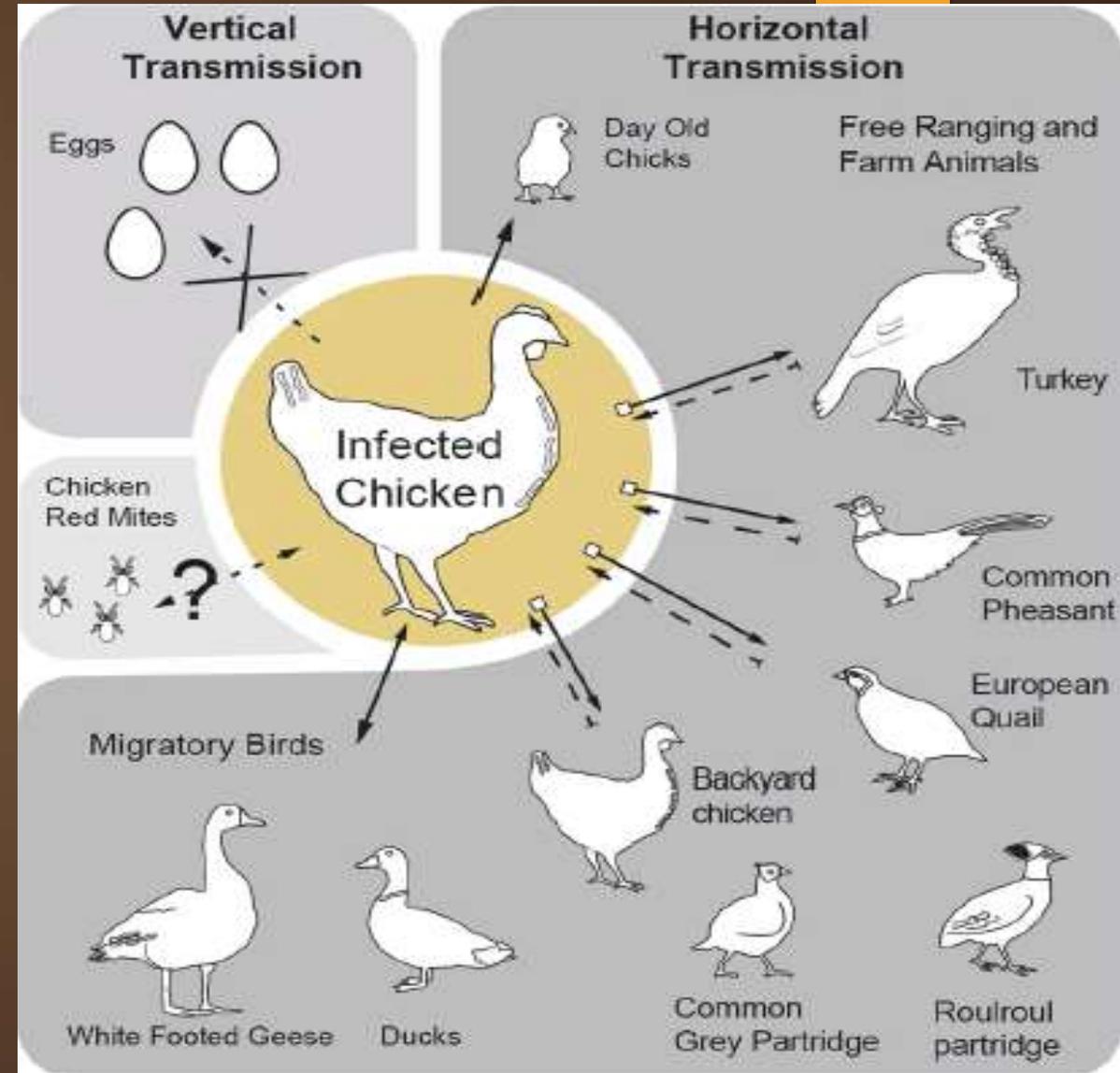
Non- pathogenic

Serotype 1 strains have been subdivided into three pathotypes

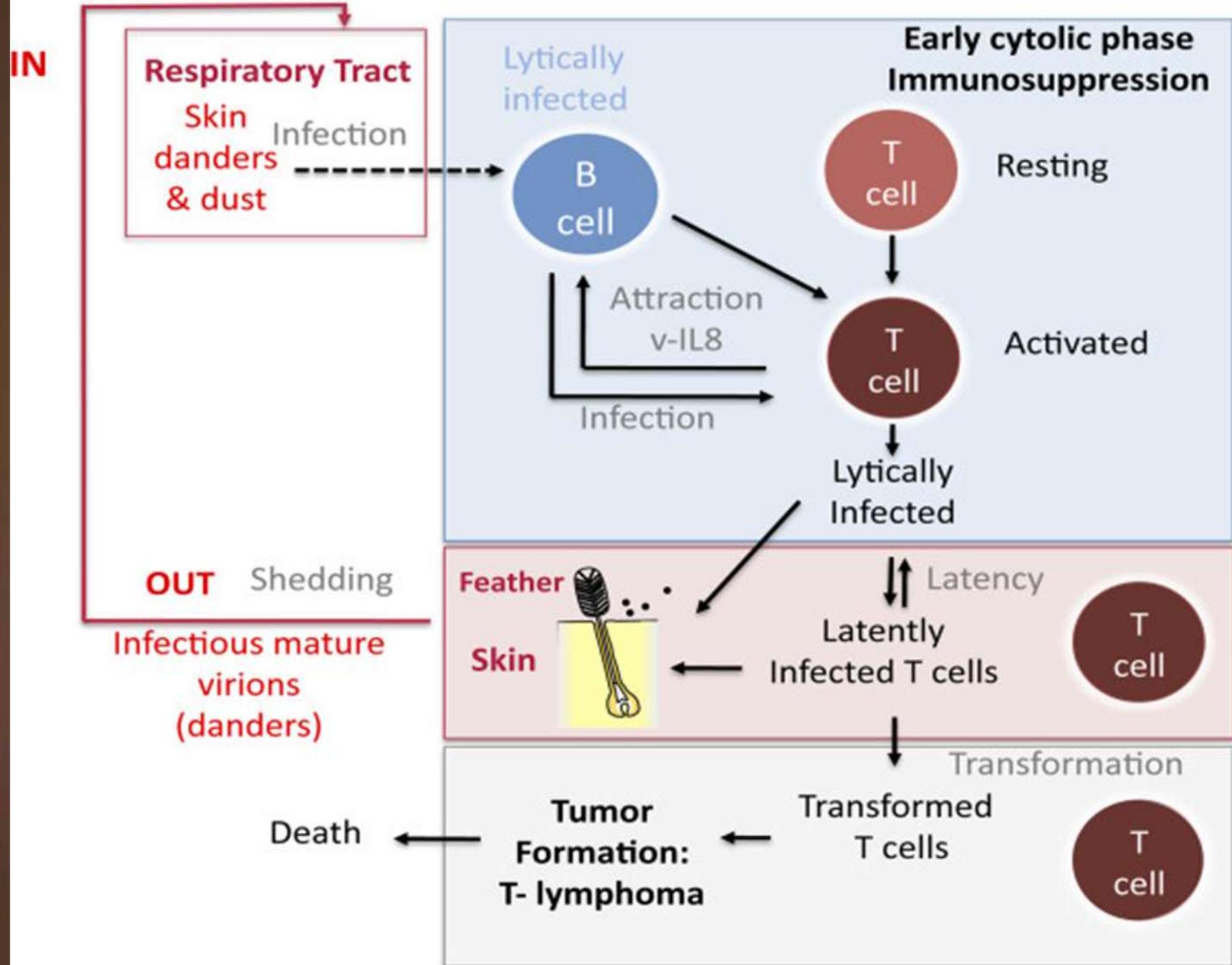
1. Mildly virulent (m-MDV)
2. Virulent (v-MDV)
3. Very virulent (v v –MDV)

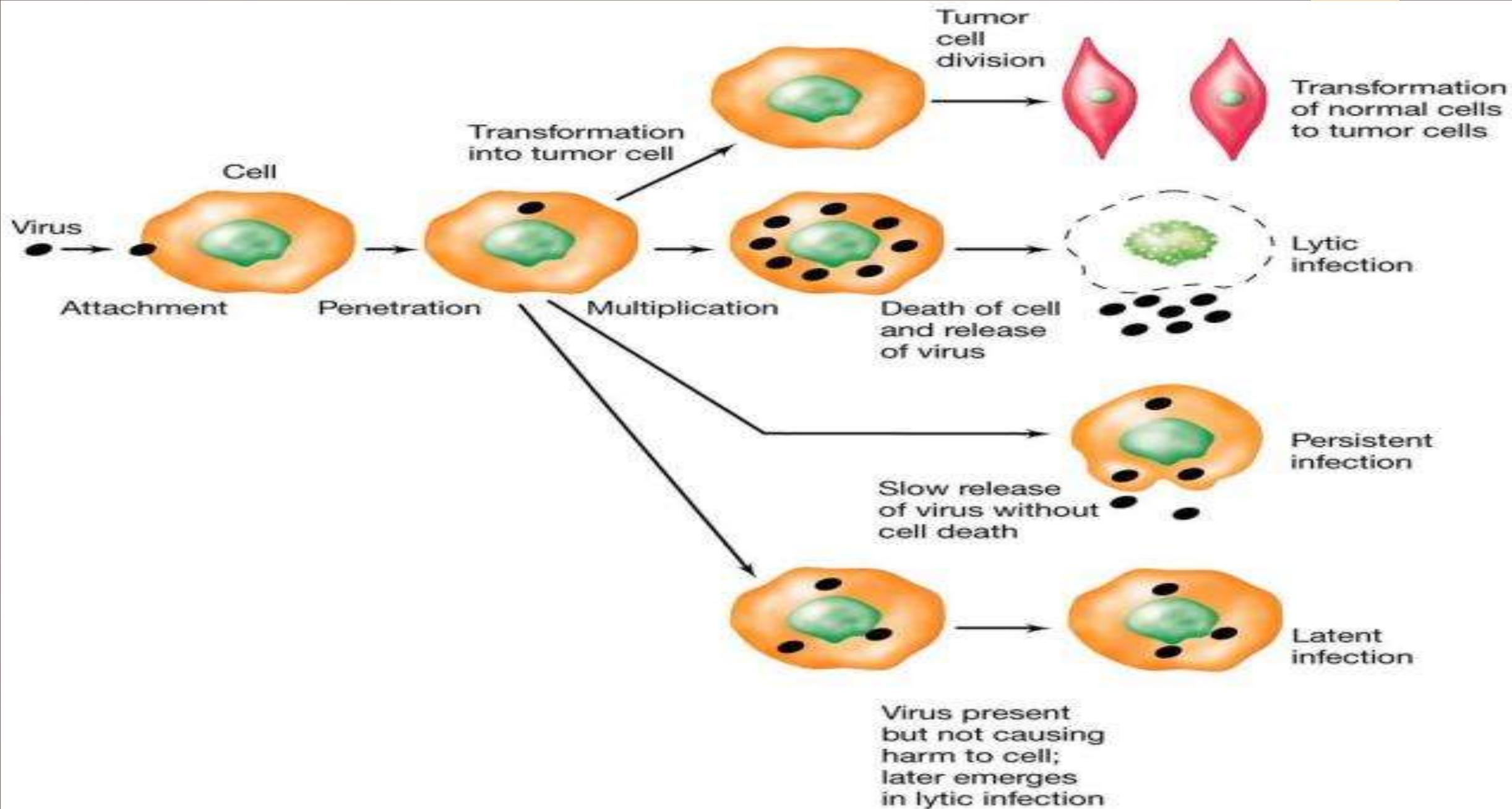
Spread Marek's disease virus (MDV) enters into the chicken through the respiratory tract.

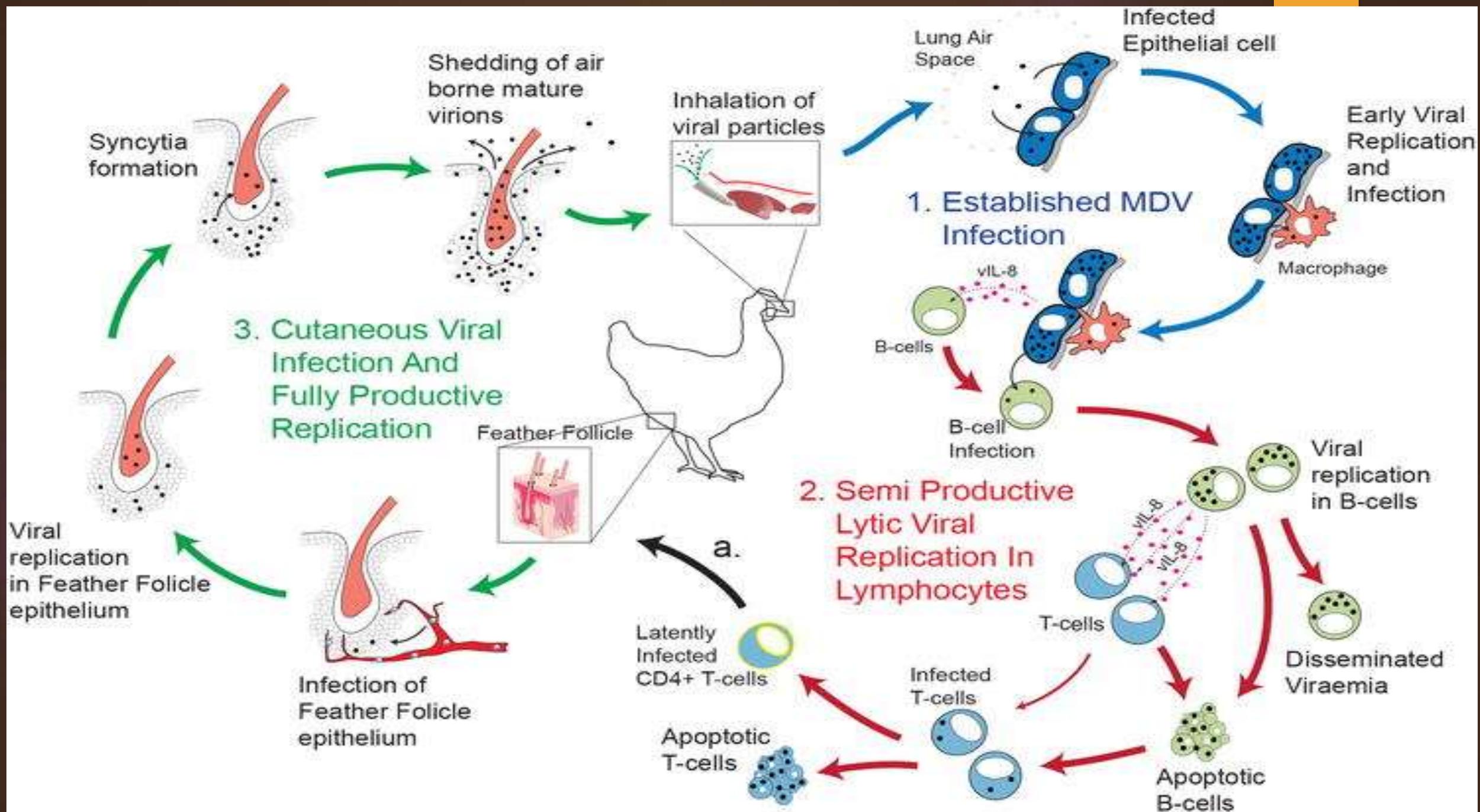
Feathers, skin danders and dust are the major source of MDV infectious materials and the basis of **horizontal bird-to-bird transmission** in field conditions



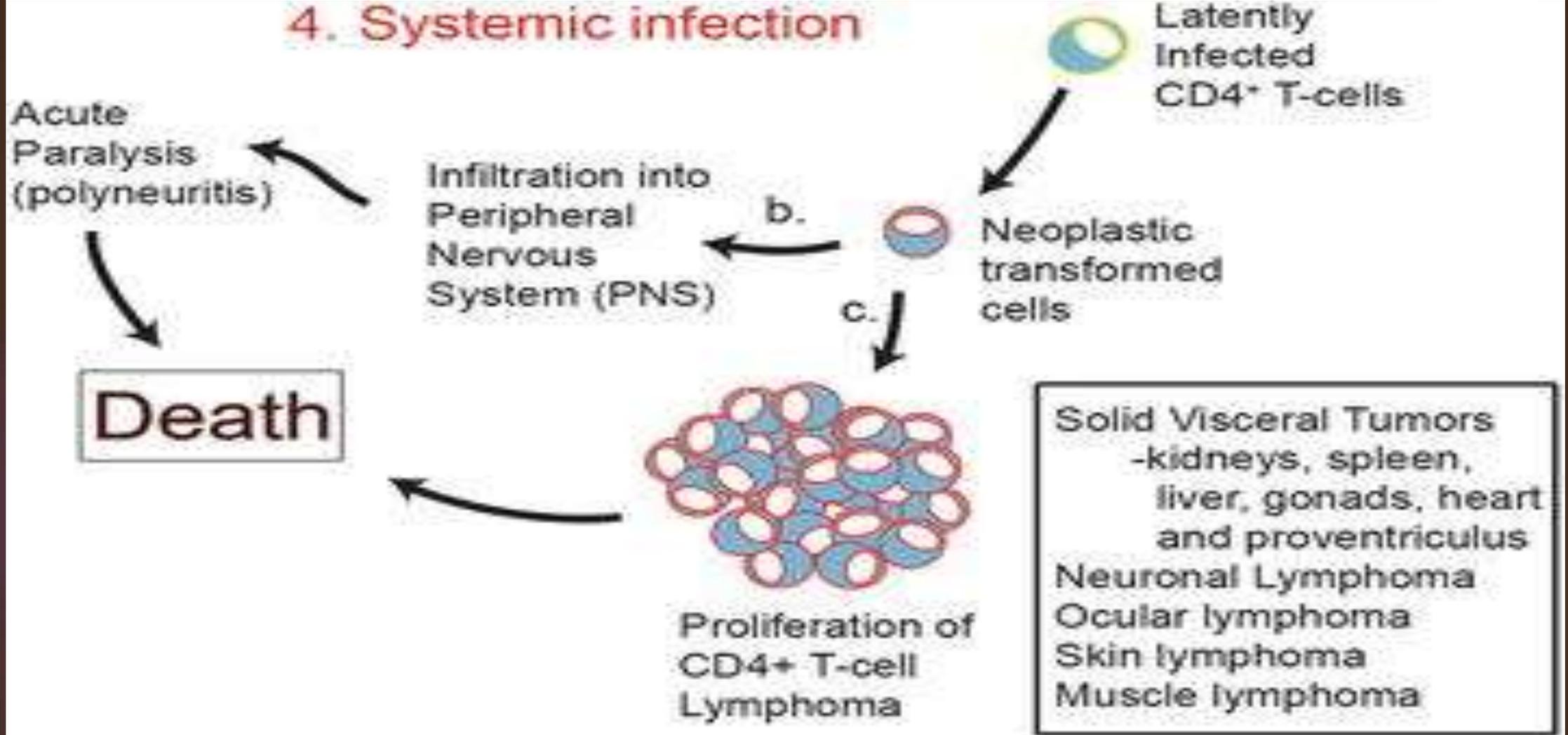
Pathogenesis







4. Systemic infection



Various forms of Marek's disease

Neurologic :- paralysis, drooping wings, extended legs, torticollis

Ocular : -Blindness, distorted iris shape, discolored iris

Cutaneous : -enlarged feather follicles, leg lesions

Visceral :- Nodular diffuse visceral lymphoid tumors

Clinical signs

MD affects chicken from **about 6 weeks of age** .

The incubation period is **3-4 weeks** .

Clinical disease occurs in **two forms** -

1. Acute MD

Mortality of 10-30% of the flock is common ,

The birds may die suddenly.

Or

showing signs of dullness , depression or respiratory distress if heart is involved.



2. Classical MD – Mortality is variable ,but rarely exceeds 10-15%.

The signs depends on the **peripheral nerves** affected-

(a).brachial and sciatic nerves-
progressive spastic paralysis(i.e. paralysis accompanied by muscular rigidity) of the wings & legs .

Incoordination is a common early sign , one leg is held forward and the other backward because of unilateral paresis or paralysis .



Spastic paralysis of limbs due to Marek's disease.

(b.). Cervical nerves –
torticollis (twisting of the
neck).



Dr. Jaime Ruiz

Torticollis (head and neck)

(c).vagus and intercostal nerves –
respiratory signs.

Unilateral paralysis



Dr. Jaime Ruiz



MD affected bird showing unilateral paralysis - i.e. characteristic posture of one leg held forward and the other held backward.

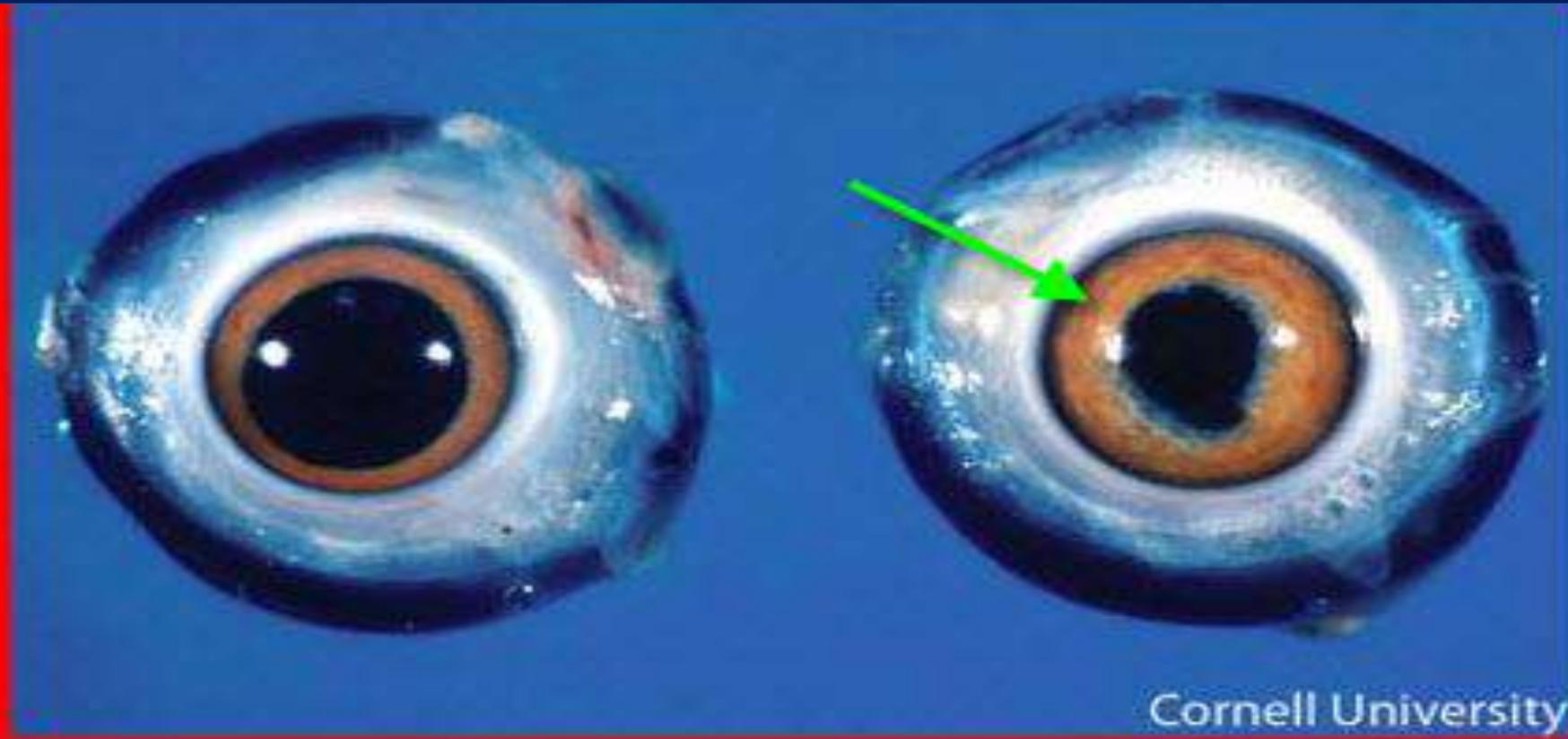


Typical paresis in MD



Cutaneous: enlarged feather follicles, leg lesions

Clinical Sign : - abnormal pupil shape, abnormal iris color

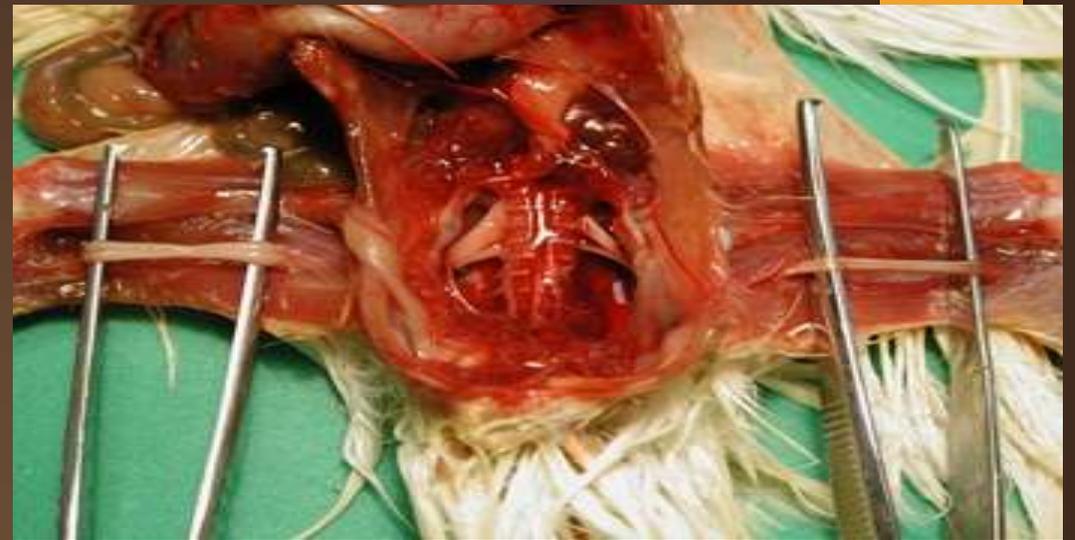


MD affected eye showing white discoloration of iris due to lymphoid infiltration . The pupil is often irregular (arrow).
A normal eye is on the left.

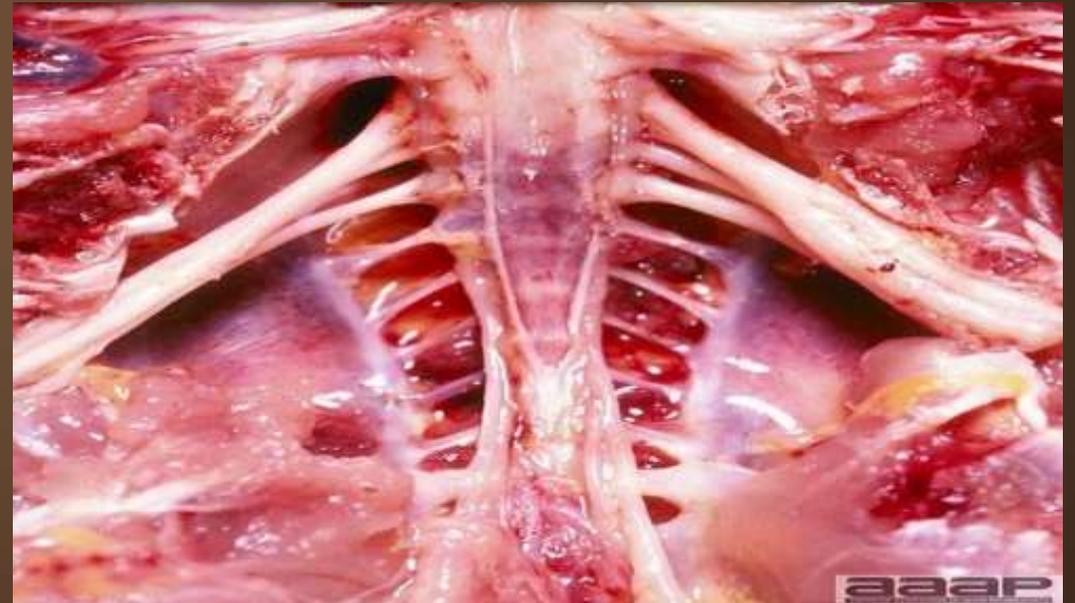
Gross lesion

1. Enlargement of one or more peripheral nerves , affected nerves are up to 2-3 times the normal thickness.

2. Nerves commonly affected are the brachial and sciatic plexus ,coeliac plexus ,abdominal vagus & intercostal nerves .



Sciatic nerve enlargement



Sciatic plexus enlargement

3. The lymphomas / tumors occurs usually in the ovary but also in lungs , kidney, heart, liver, skin ,feather follicles (skin leucosis) & muscles .

4. diffuse lymphomatous involvement & enlargement of the liver ,gonads ,spleen ,kidney , lungs , proventriculus and heart.



Kidney tumor



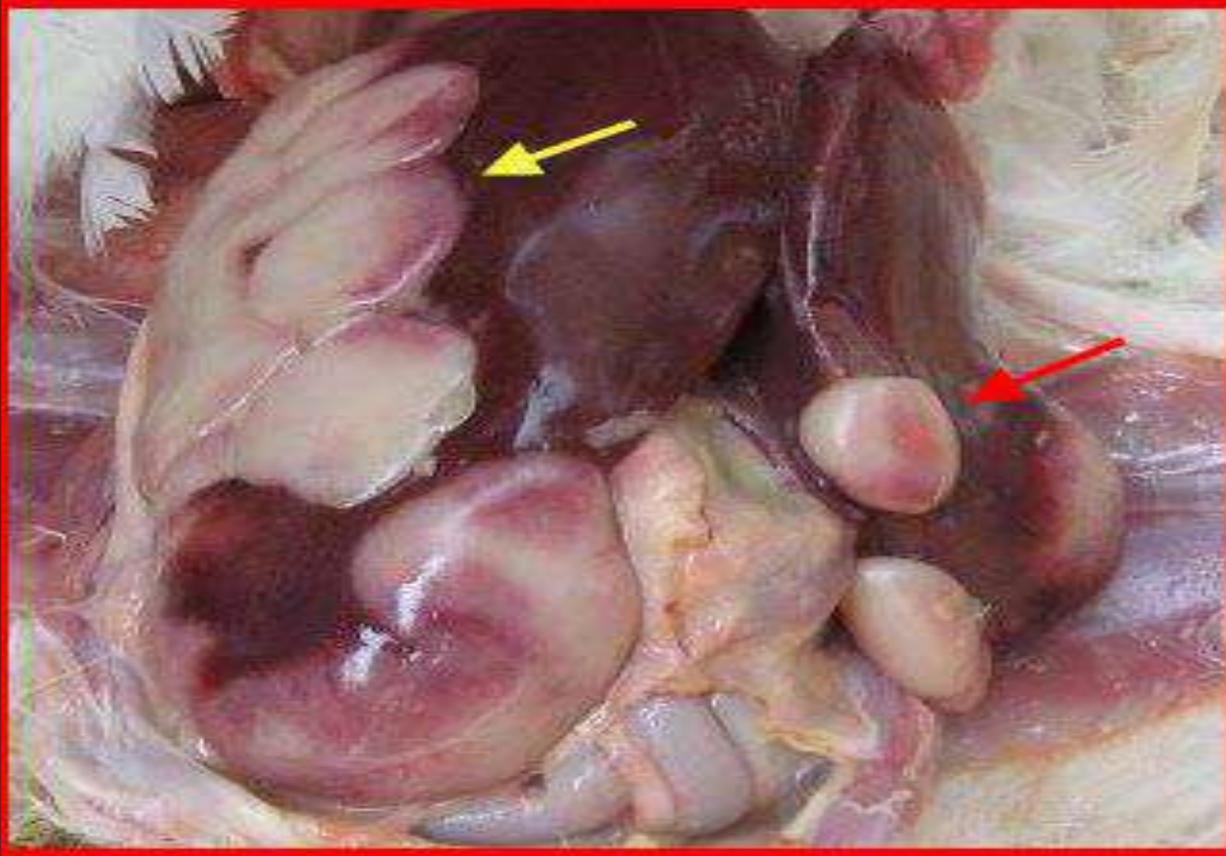
Heart tumor



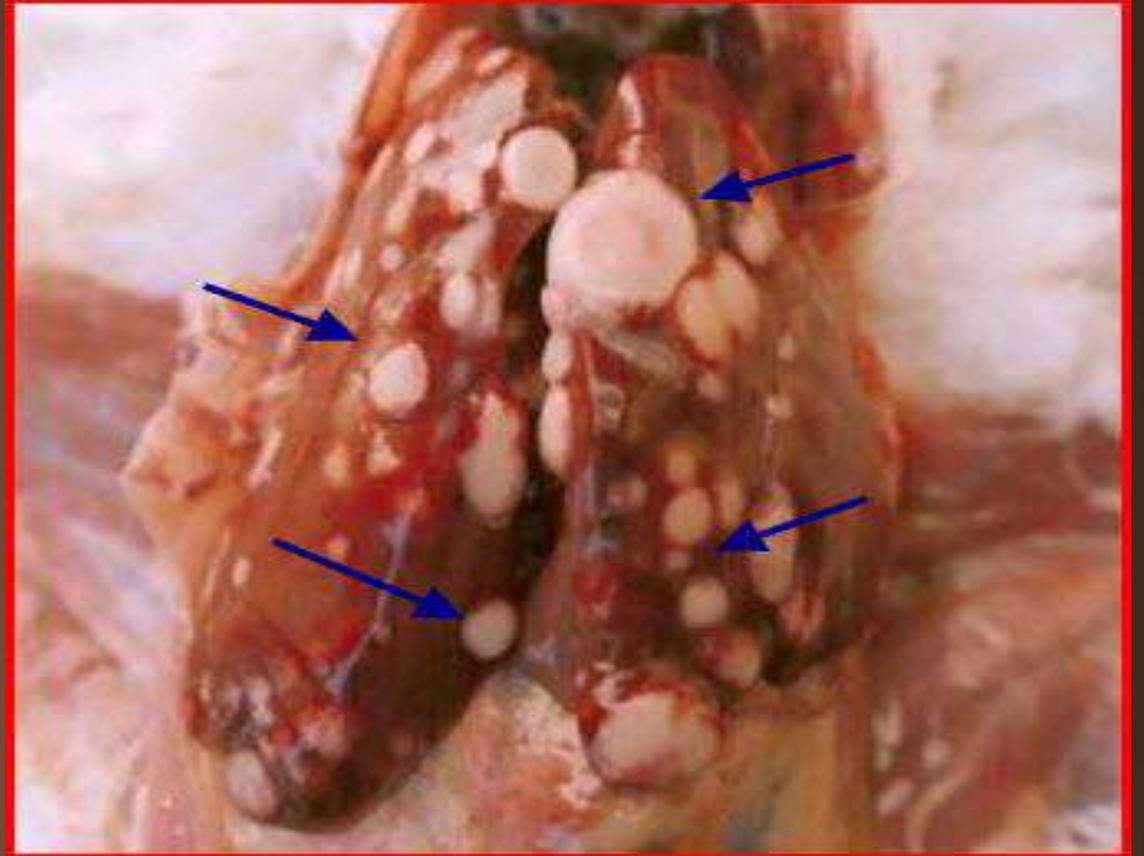
Proventricular tumor



Liver tumor



MD affected liver showing massive invasion of tumour into the hepatic parenchyma. (Red arrow-Single nodule; Yellow arrow- Multiple nodules)



MD affected liver showing tumour nodules (arrows) of varying sizes on its surface.



Visceral lymphomas

Microscopic lesion - 3 types of lesions are seen in the peripheral nerves .

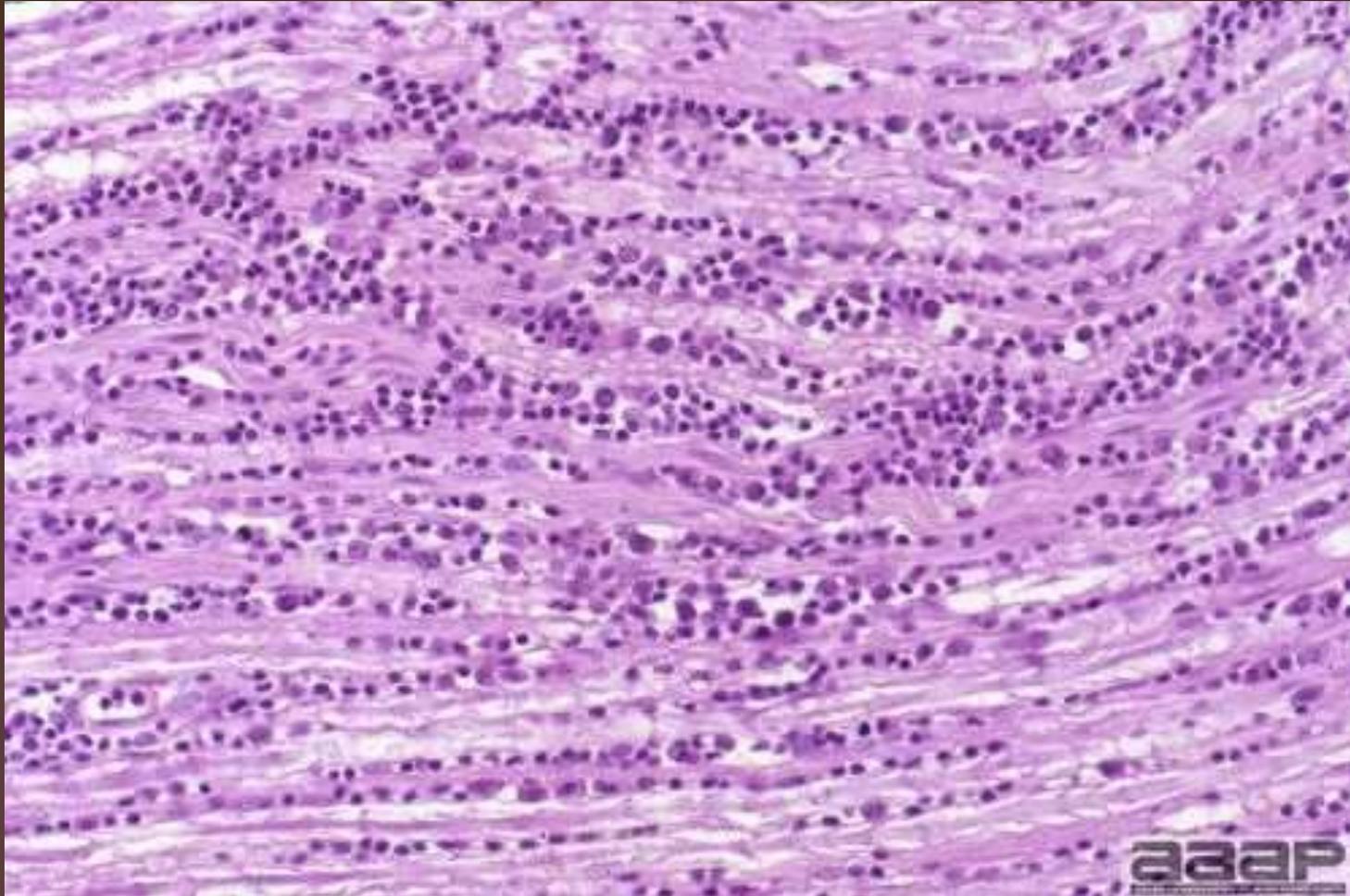
(a) Cellular infiltration of nerves with **mature lymphocytes** .

(b) separation of nerves fibres associated with **oedema** .

(c) the nerves are infiltrated with **lymphoblasts**.

Myelin degeneration of the nerves is common .

Necrosis of follicles of **bursa of fabricius** is commonly seen and cysts are also seen .



Nerve infiltration in MD

Prevention and control



Day old chick being given the vaccine for Marek's

Feature	Marek's disease	Lymphoid leucosis
Virus	herpes virus (Ds-DNA)	Retro virus(Ss-RAN)
AGE	6 Week or older	16 week or above
CNS	affected	not affected
ovary	affected	not affected
Ocular lesion	present	absent
leucosis	Inflammatory in origin	neoplastic in origin
Airborne infection	present	absent
Cofal factor	absent	present
Rif factor	absent	present

Feature	Marek's disease	Lymphoid leucosis
Nerve affected	present	absent
Feather follicle epithelium(FFE) affected	present	absent
Symptoms	Frequently paralysis	Non-specific
Liver tumors	perivascular	focal , diffuse
Cytology of tumors	Pleomorphic lymphoid cells	Lymphoblasts
Category of neoplastic lymphoid cell	T cell	B cell

*Thank
You!*

