

SALMONELLOSES



A man with short dark hair, wearing a light-colored button-down shirt with dark sleeves and dark trousers, stands in front of a large, multi-tiered artificial waterfall. The waterfall is constructed from large, reddish-brown rocks and cascades down into a pool of water at the bottom. The background shows a building with large windows and some potted plants on the left. The text is overlaid on the image in a bold, black, sans-serif font.

P.M Poultry Diseases 4th year series

By Mohamed Mahmoud Salem gab Allah
Assistant lecturer of pathology
Faculty of Veterinary Medicine, Benha
University, Moshtohor,
Tukh; 13736 , Qalyuobia, EGYPT



SALMONELLOSIS

Salmonellosis (Fowl Typhoid)

Intestine : catarrhal enteritis

Liver : bronze colour
pinpoint necrotic foci

Heart : necrotic foci ,hydropericardium

Kidneys : nephritis interstitial

Ovary : cystic degeneratin ova

Pancreas : inflammation

Bursa : bursitis, cyst formation

Brain : inflammation

Abdominal cavity : ascites

orchitis in cockrels

Salmonellosis (Pullorum in chicks)

Intestine : **catarrhal enteritis**

Liver : **focal, pale necrotic areas**

Lung : **bronchopneumonia**

Heart : **focal necrosis**

Kidneys : **nephritis interstitial**

serous membranes : **peritonitis**

unabsorbed yolk

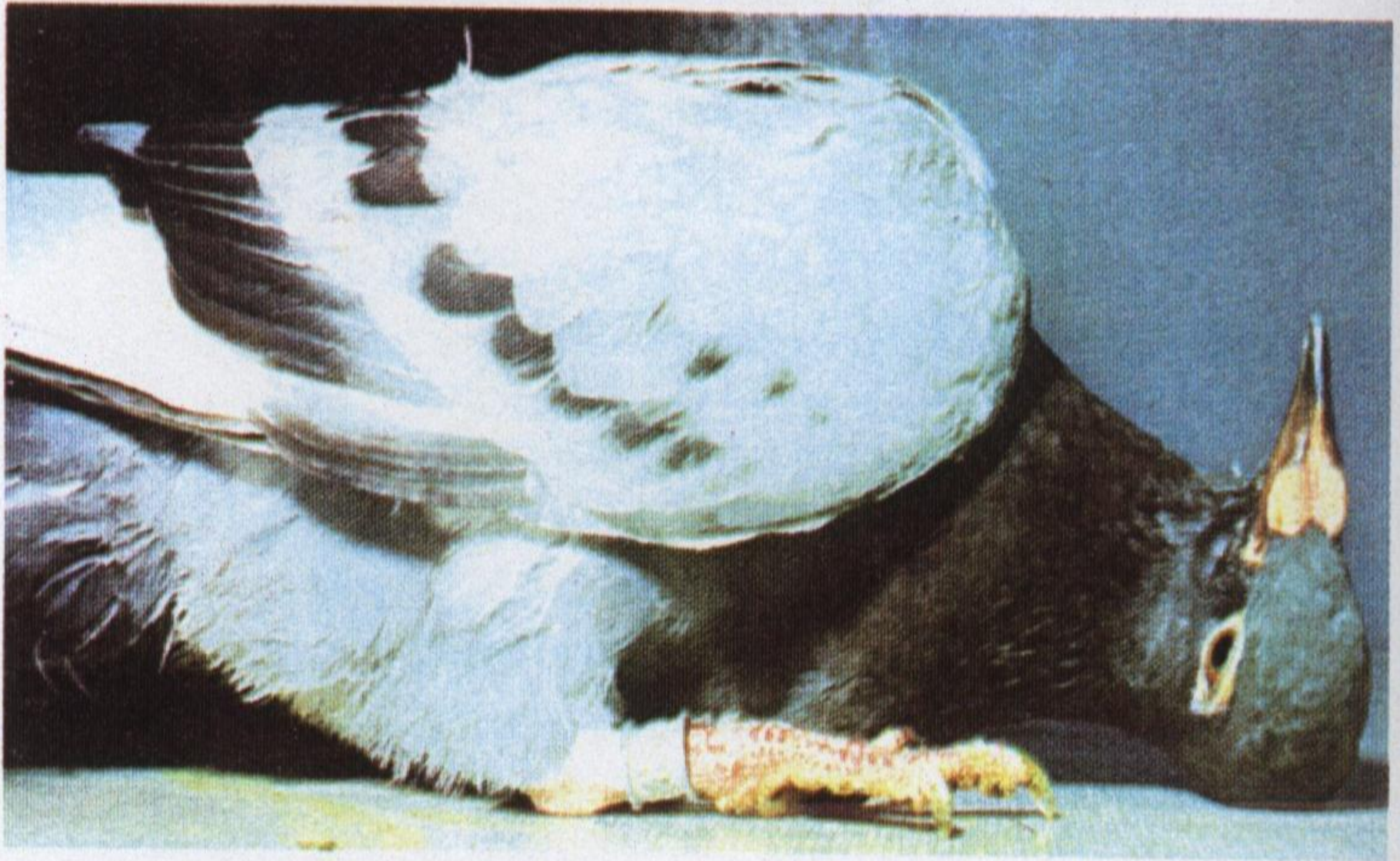


Fig. 97: Torsion of the neck (torticollis) in brain and bone-marrow inflammation of salmonellosis

SALMONELLOSES

53. Fowl paratyphoid is an acute or chronic disease in domestic fowl and many other avian or mammalian species, caused by some motile *Salmonella* serotypes that are not host-specific. The highest morbidity and death rates are usually observed during the first 2 weeks after hatching.

The chickens are drowsy, with eyes closed, ruffled feathers and grouped near the sources of heat.

25





ORGAN : **Baby chick**
LESIONS : **Pasty vent**
SUSP.DIS. : **Salmonellosis**

SALMONELLOSES

36, 37. Pullorum disease is an acute systemic disease in chickens and turkey poults. The infection is transmitted with eggs and is commonly

characterized by a white diarrhoea

and high death rate, whereas adult birds are asymptomatic carriers. The morbidity and the mortality rates increase about the 7 th - 10th day after

hatching. The affected chickens appear somnolent, depressed and

their growth is retarded. **The feathers**

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Pericarditis due to salmonella enteritidis in 4 days old broiler chick.



Fowl typhoid

greenish brown or bronze coloured swollen liver
with pin-point necrotic foci

SALMONELLOSES

41. Sometimes, **greyish-whitish milliary necroses** are found out in the **liver**.

S. pullorum is transmitted by infected eggs of layer hens that are carriers. Many hatched infected chickens spread the microorganism by a horizontal route to other birds via the gastrointestinal and the urinary tracts. Adult carrier birds also spread the agent through their excreta



SALMONELLOSES

56. Sometimes, **necrotic foci in the liver are discovered**. The infection of small chickens occurs by penetration of microorganisms into the egg after faecal contamination. The transmission of agents could be done also by a contaminated source of animal protein (meat and bone meal etc.). The rodents are a significant reservoir of paratyphoid microorganisms. The treatment inhibits but does not eradicate the infection. The appropriate treatment minimizes the death rate until the birds develop immunity.



SALMONELLOSES

44. Acute fowl typhoid.

In some instances, the enlarged liver is mottled with multiple milliary necroses. The outbreaks are observed primarily in hens and turkeys, but the disease is sometimes encountered in other domestic or wild fowl.



SALMONELLOSES

45. Acute fowl typhoid.

In other cases, the size **of liver necroses varies from milliary to spots with a diameter of 1 - 2 cm.**

Unlike pullorum disease, fowl typhoid is lasting for months.



SALMONELLOSES

43. Acute fowl typhoid.

The outbreaks usually begin with a sharp decline in forage consumption and egg production.

The fertilization and hatchability rates are considerably reduced .

Diarrhoea appears. The death rate in acute fowl typhoid is high and varies between 10% and 90%.

About 1/3 of chickens hatched from eggs from typhoid-infected

flocks die. **A characteristic lesion**

for acute fowl typhoid in adult

birds is the enlarged and bronze

greenish tint of liver.



ORGAN : Liver and spleen

LESIONS : Bronzy liver and congested spleen

SUSP.DIS. Salmonellosis



affected

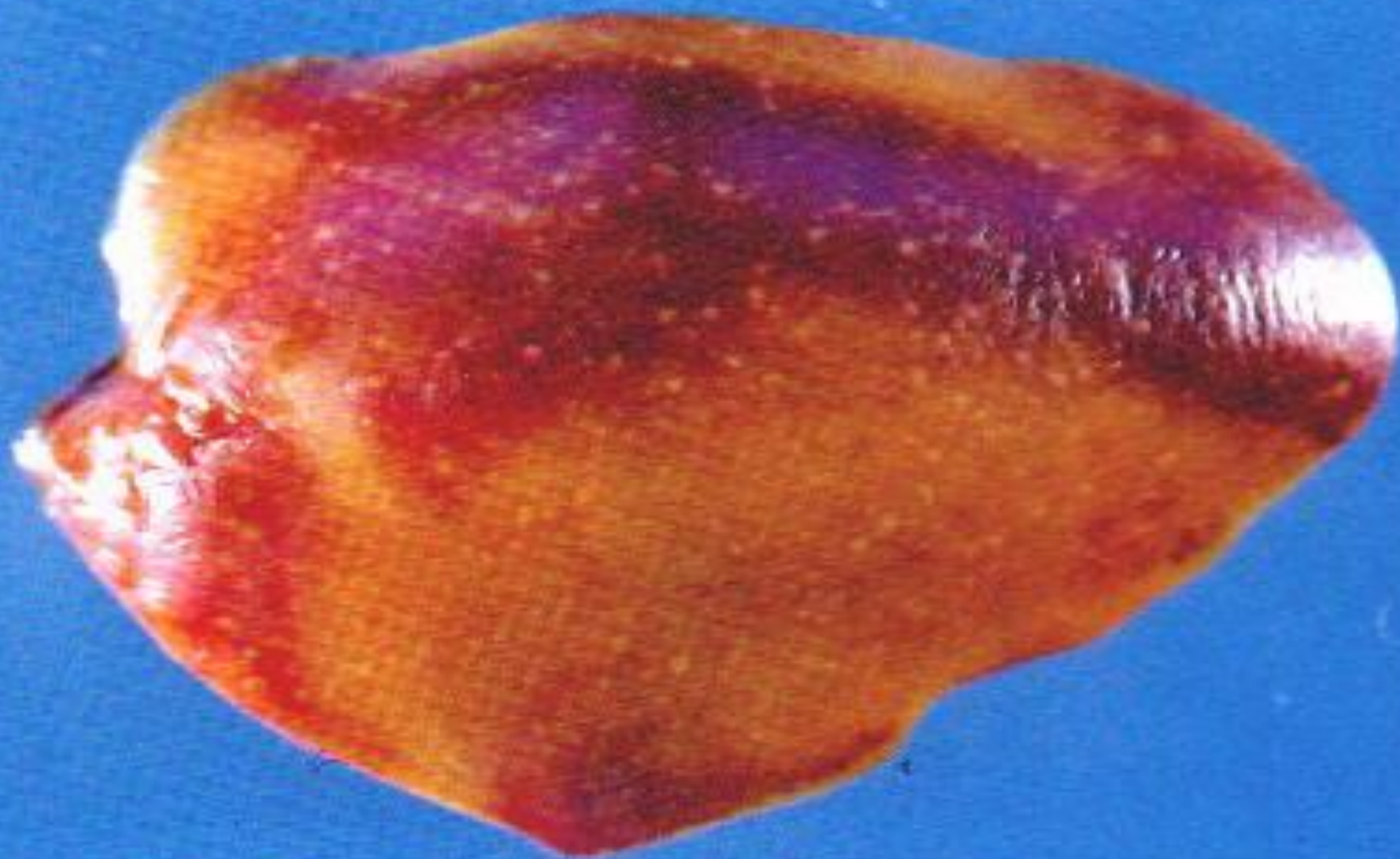


normal



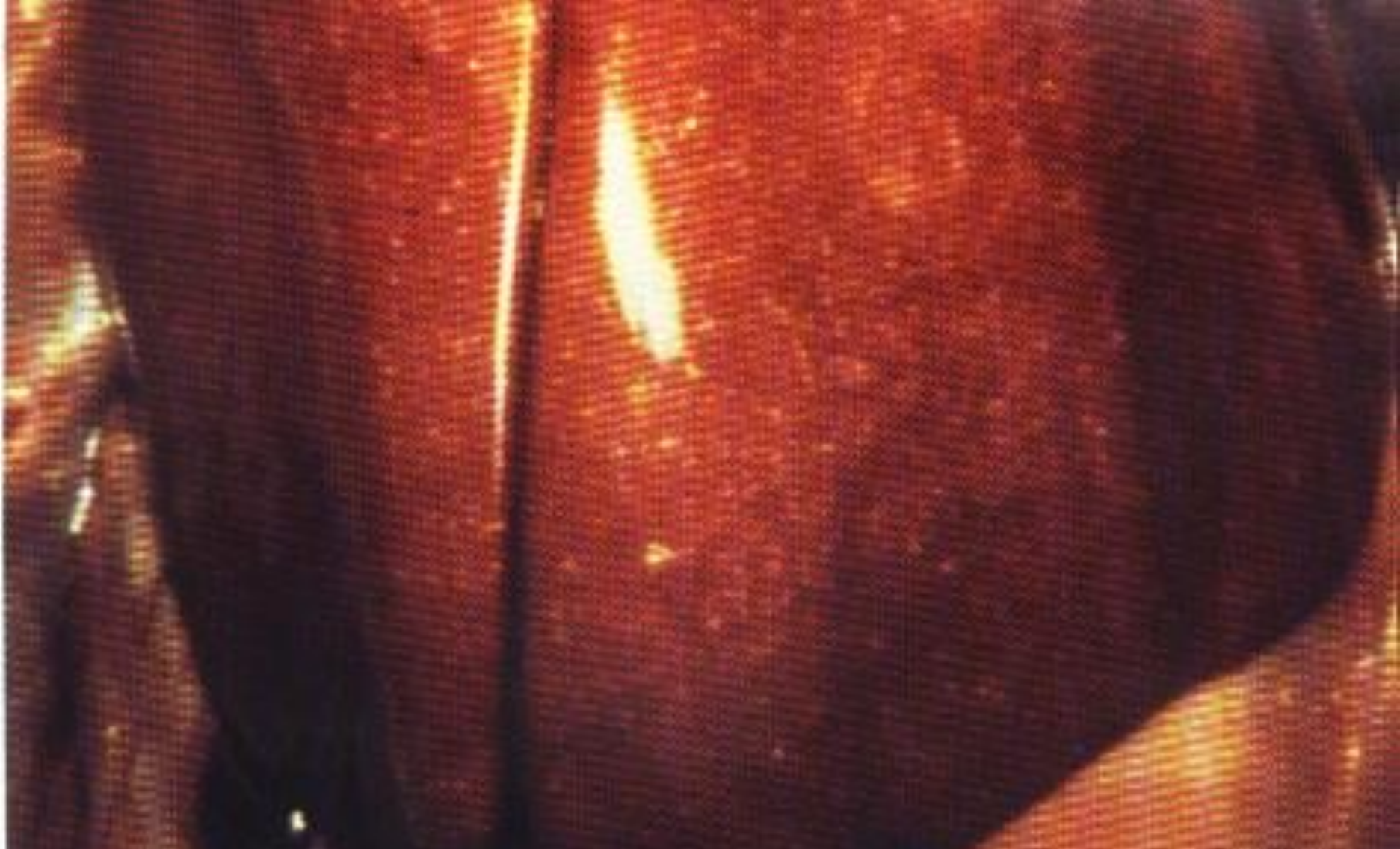
Salmonellosis

jaundice in which the affected liver displays a characteristic bronze colour
there is also severe congestion of the spleen



Salmonellosis

Focal necrotic areas are distributed on the liver



ORGAN : **Liver**

LESIONS : **Small focal necrosis**

SUSP.DIS. : **Salmonellosis or Pasteurullosis**

ORGAN : Lung

**LESIONS : Brown
discoloration**

SUSP.DIS. : Salmonellosis



SALMONELLOSES

49. Acute fowl typhoid.

The lungs acquire a characteristic brown colour. Here, necroses and, following their organization, "sarcoma-like nodules" could be observed.





- **liver** پروتزی
- **spleen** بنفسجی
- **lung** ابنی



Bacillary white diarrhoea (salmonellosis)

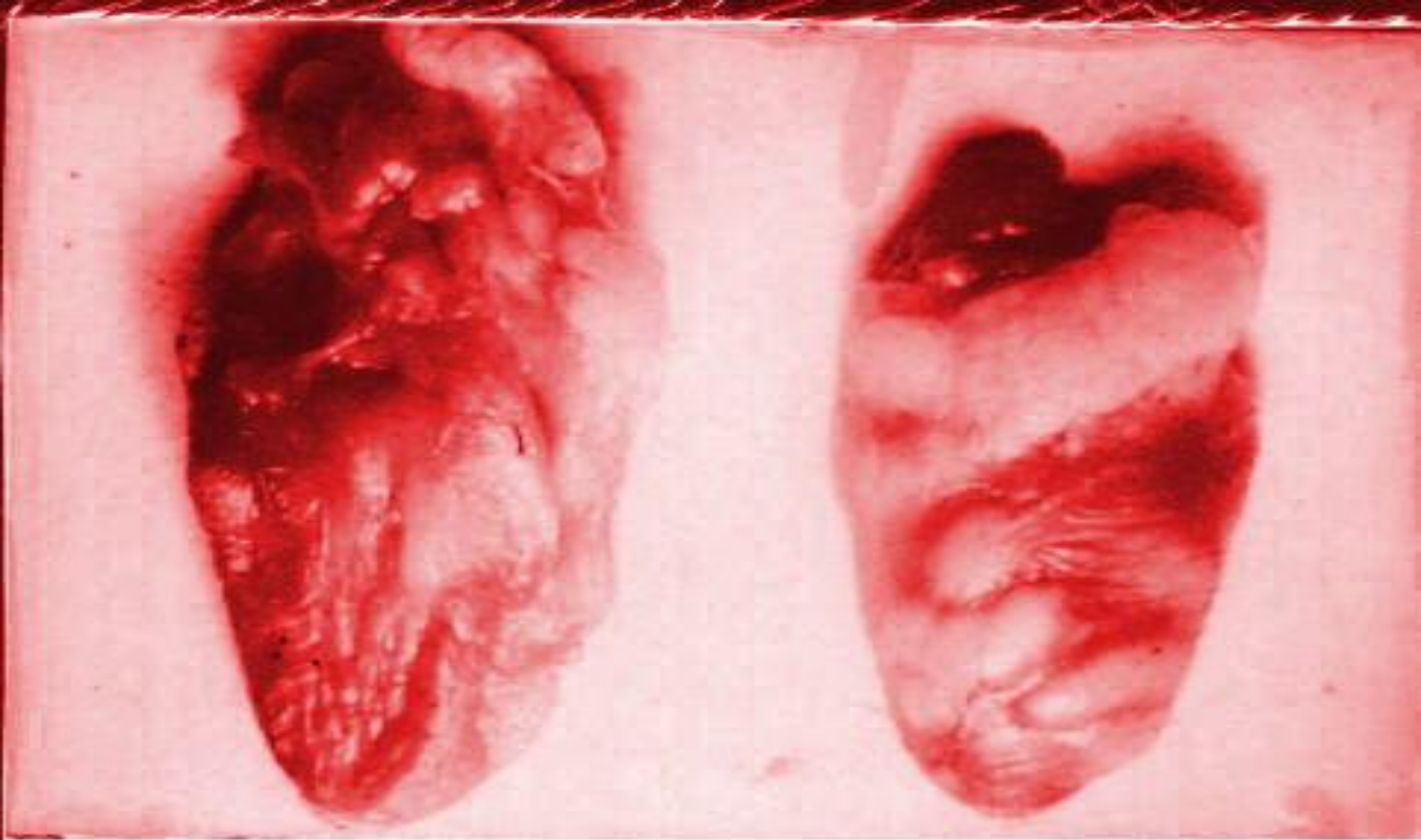
greyish-white necrotic foci in the lung, heart and liver

ORGAN : Chest cavity

LESIONS : Grayish
white necrotic foci on lung

SUSP.DIS: Salmonellosis



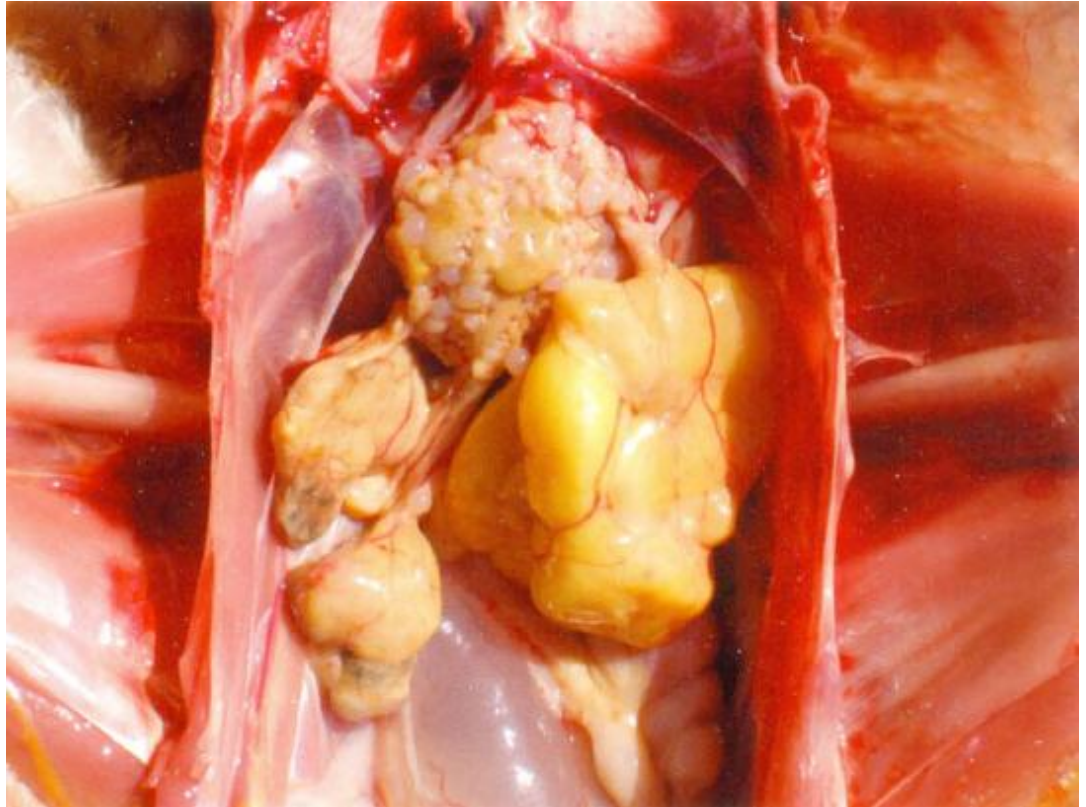


Fowl typhoid (granuloma)

**Pale or whitish nodules causing a marked distortion of the shape of the heart
(microscopically : necrotic foci)**

SALMONELLOSES

50. Chronic fowl typhoid.
The lesions are primarily in
the gonads. **The ovaries are
affected by inflammatory and
degenerative changes.**



SALMONELLOSES

51. Chronic fowl typhoid.

Frequently, affected follicles are deformed and appear like thick

pendulating masses. Fowl typhoid

should be differentiated from other salmonellosis, *E. coli* infections, *Pasteurella spp.* infections etc.

If breeder flocks are proved to be carriers of the infection, their eggs should not be used for breeding.



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52. Chronic fowl typhoid.

Sometimes, the going out of yolk from degenerated follicles results

in **fibrinous adhesive peritonitis**.

Taking into consideration that chemotherapy does not eliminate the carriership, the treatment of poultry infected with fowl typhoid or pullorum disease is not justified and is never recommended.





ORGAN : Ovaries

LESIONS : Misshaped, discolored, pedunculated ova with long stalks

SUSP.DIS. : Chronic salmonellosis



Oophoritis (salmonellosis)

degenerating ova (the contents are discolored and inspissated)
some of the ova are attached to the body of the ovary by a stalk



Fowl typhoid

ovaritis with msi-shaped ova in the ovary

SALMONELLOSES

39, 40. The aetiological agent is *S. pul/orum*, a non-motile Gram-negative microorganism. *S. pul/orum* is very resistant under moderate climatic conditions and could survive for months. It could be killed by fumigation with formaldehyde of breeder eggs in the hatchery.

Typical for this form are the greyish-whitish nodes in one or some of the following places: heart (39), lungs, liver; gizzard walls (40) and intestines, the peritoneum.



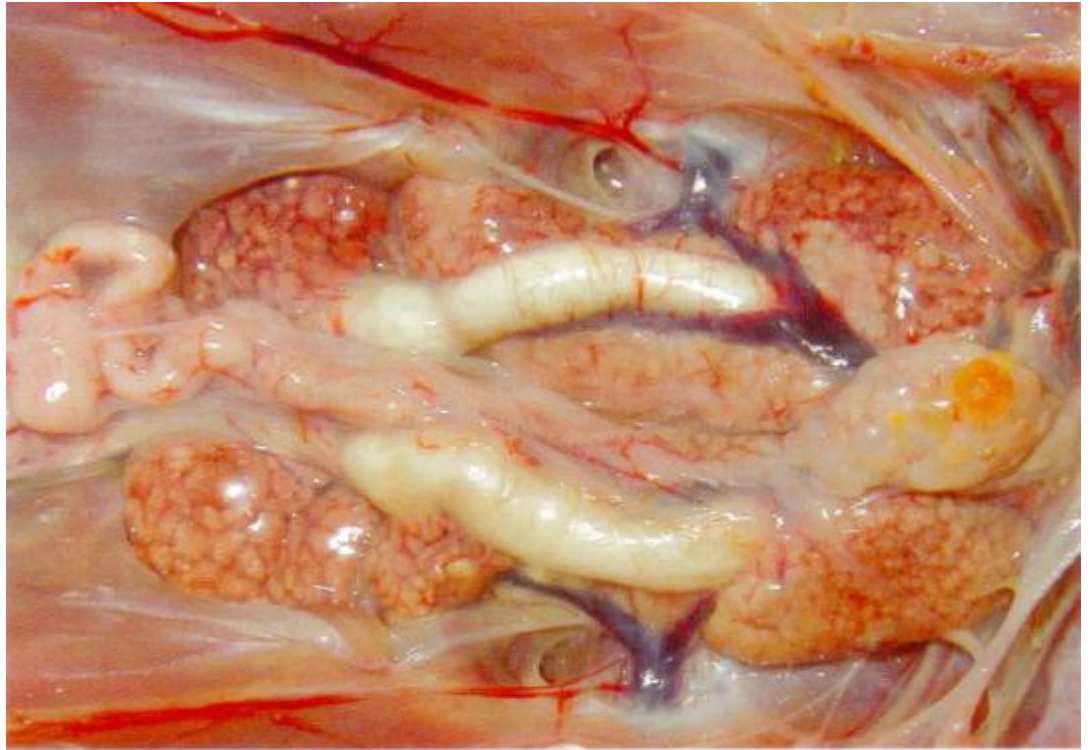
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42. Ureters are often filled with urates. For confirmation of the diagnosis, *S. pullorum* should be isolated and typed. Pullorum disease must be differentiated from other salmonellosis, *E. coli* infections, *Aspergillus* that produces similar pulmonary lesions, *Staphylococcus aureus*, causing arthrites etc. Sometimes, **the pulmonary nodes resemble the tumours in Marek's disease.**

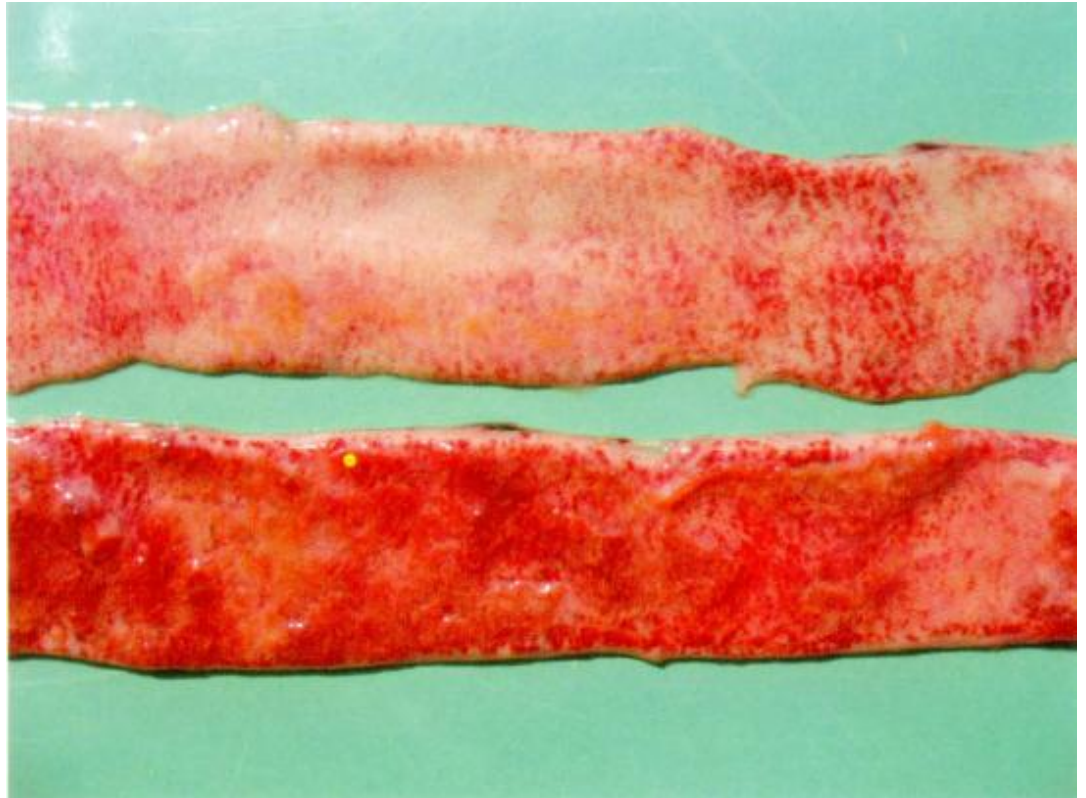


SALMONELLOSES

47. Acute fowl typhoid.

Often, **enteritis, especially of the anterior part of small intestine,**

sometimes with ulcerations, is present. The aetiological agent is *Salmonella gallinarum*. This organism usually shares common antigens with *S. pullorum* and the two microorganisms often give a crossagglutination reaction .



SALMONELLOSES

48. Acute fowl typhoid.

More rarely, myocardial necroses due to *Salmonella* toxins are detected . The transmission of the infection by contaminated eggs is especially important. Moreover, the transmission of *S. gallinarum* occurs mainly among growing or productive flocks and the death rate among adult birds is higher.



SALMONELLOSES

46. Acute fowl typhoid.

The spleen is 2-3 times bigger, sometimes with greyish-whitish nodules protruding on the surface, representing hyperplastic follicles.



ORGAN :
Opened Cecai
LESIONS :
Typhlitis (Casiuous
caecal core).
SUSP.DIS. :
Salmonellosis



83 *S. typhimurium*. Pale cores of inflammatory debris within the caeca of a broiler chick.

SALMONELLOSES

54. Diarrhoea, dehydration and pasted down appearance around the vent are observed. Pathoanatomically, marked catarrhal haemorrhagic enteritis is observed .

Often the caeca are filled with gelatinous, fibrinous, cheese-like

exudate . This is a finding, characteristic for salmonellosis, but it is not specific for any of serotypes.



SALMONELLOSES

55. The inflammatory

fibrinous exudate in caeca

often forms casts with the shape of mucosal folds.

The aetiological agents are about 10 - 15

Salmonella serotypes

and the most common

isolates are *S. Enteritidis*

and *S. Typhimurium* . Most

fowl paratyphoid organisms

contain an endotoxin ,

responsible for their

pathogenic effects.





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Salmonella typhimurium infection in
gosling. Cheesy plugs in the ceca

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Caseous plugs in the ceca of broiler chick.

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38. **The oedema of tibiotarsal joints**

is a frequent associated sign. Pullorum disease is widely distributed among all age groups of chickens and turkeys. The highest losses are in birds under the age of 4 weeks.





ORGAN : Opened joint

LESIONS : Straw-yellow colored exudates (arthritis)

SUSP.DIS. : Salmonellosis

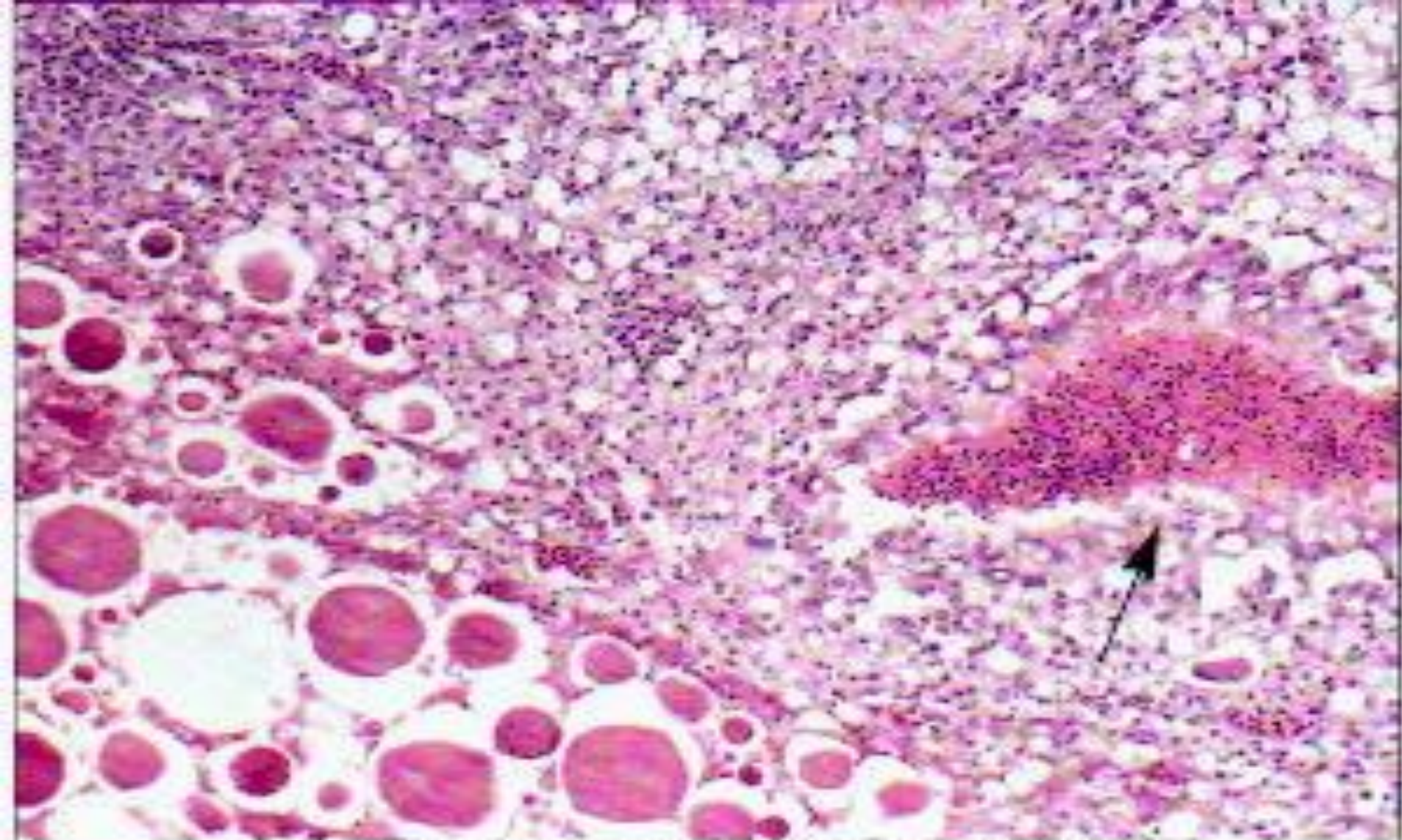


**Salmonella enteritidis infection in gosling.
Pericarditis and perihepatitis**



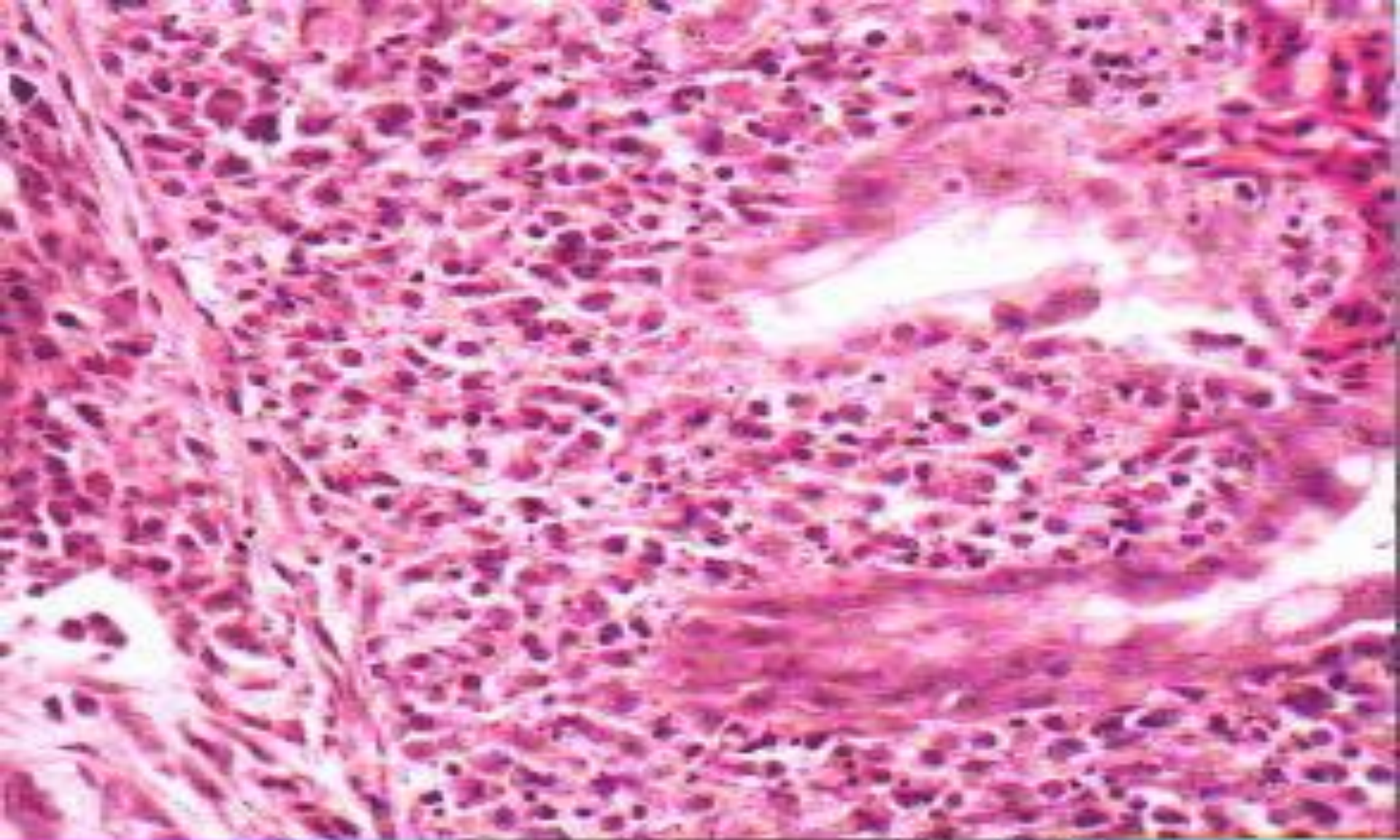
**Salmonella typhimurium infection in goosling.
Enlarged liver with focal necrosis**





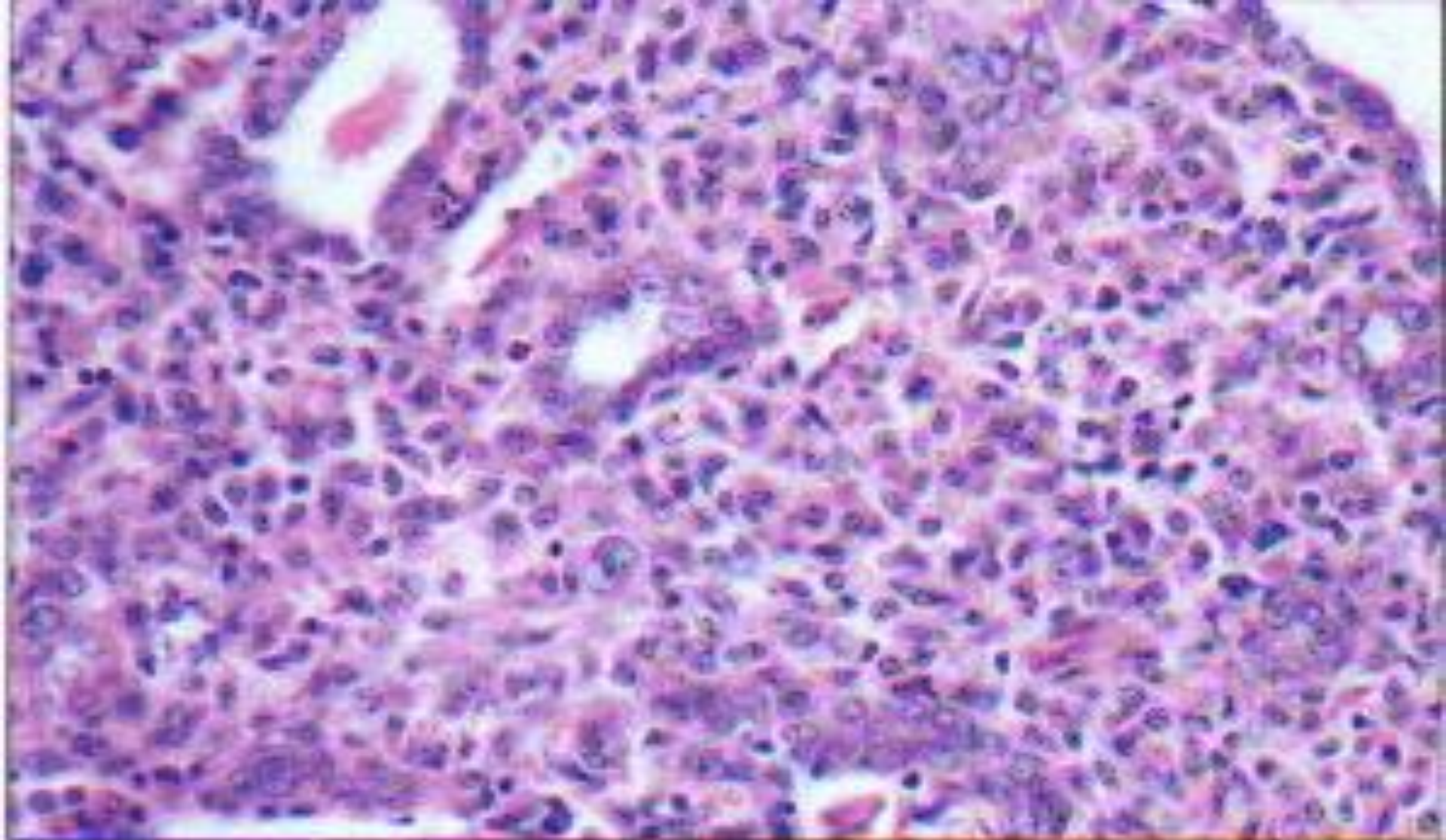
Ovary (Salmonellosis)

oophoritis: subacute granulomatous lesion

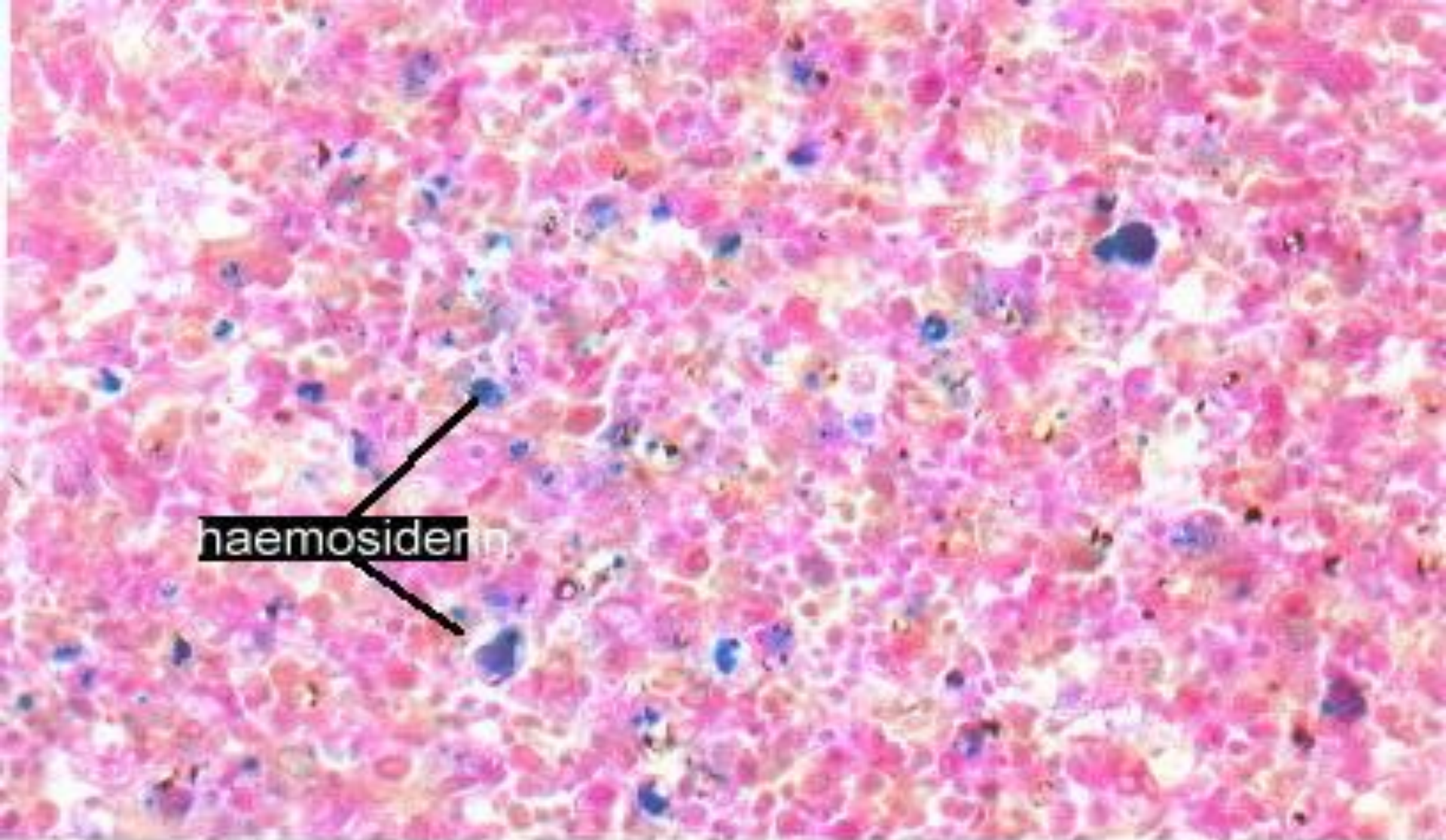


Cecum (Salmonellosis)

infiltration of macrphages, lymphocytes and granulocytes in the mucosa



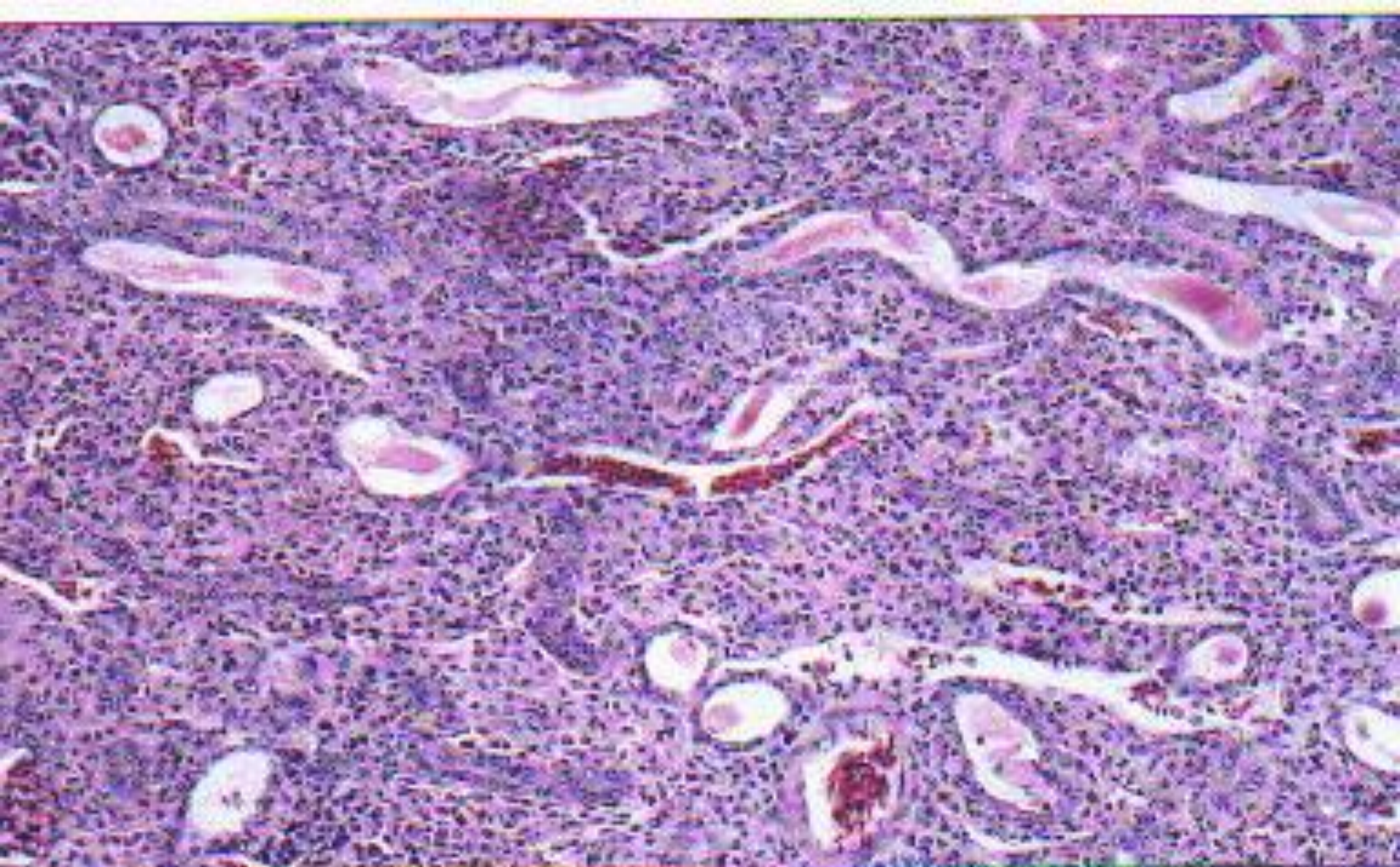
**Kidney (Salmonellosis, pigoen)
interstitial nephritis**



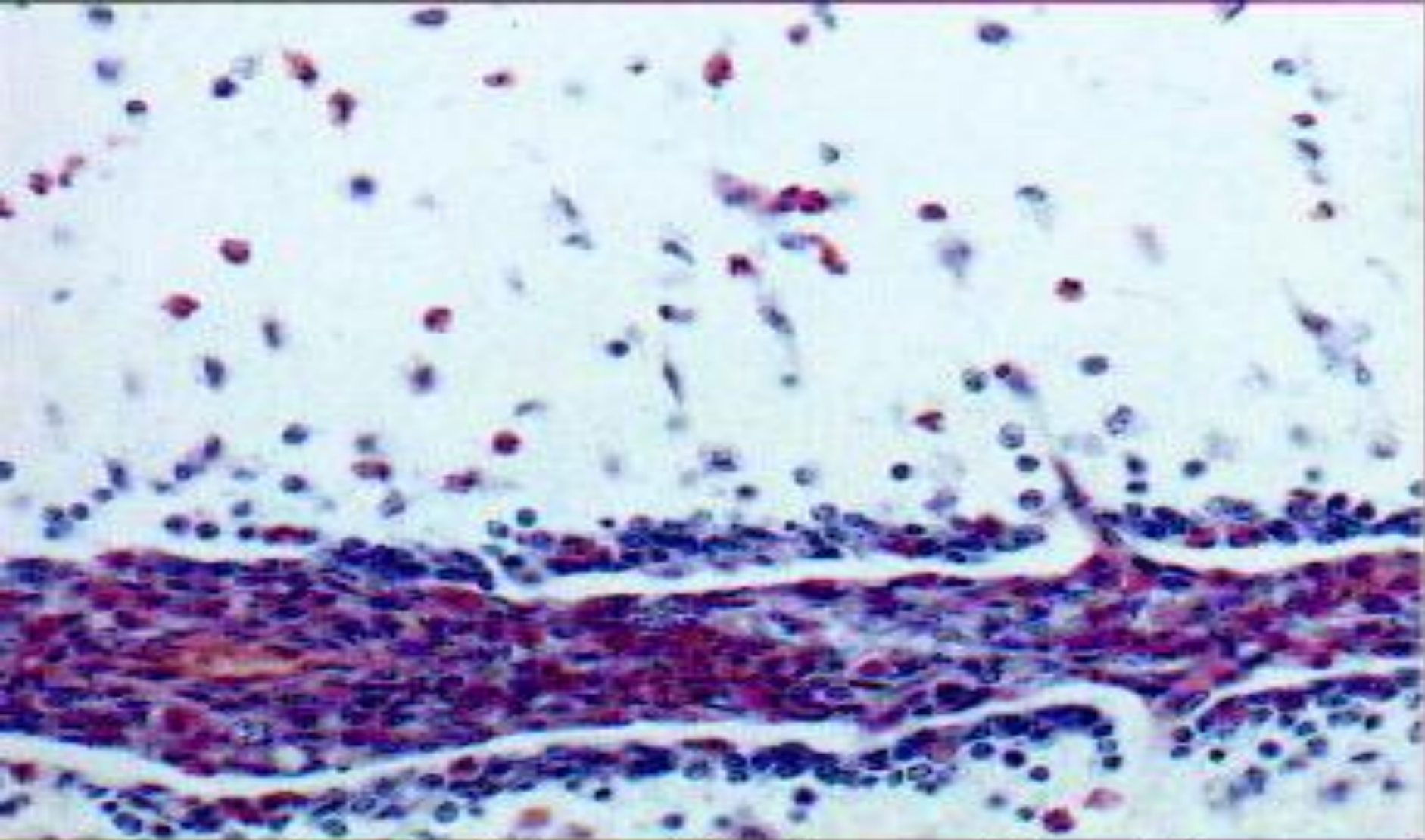
haemosiderin

Salmonellosis Spleen

moderate haemosiderosis as a result of haemolytic anaemia
accompanying the disease

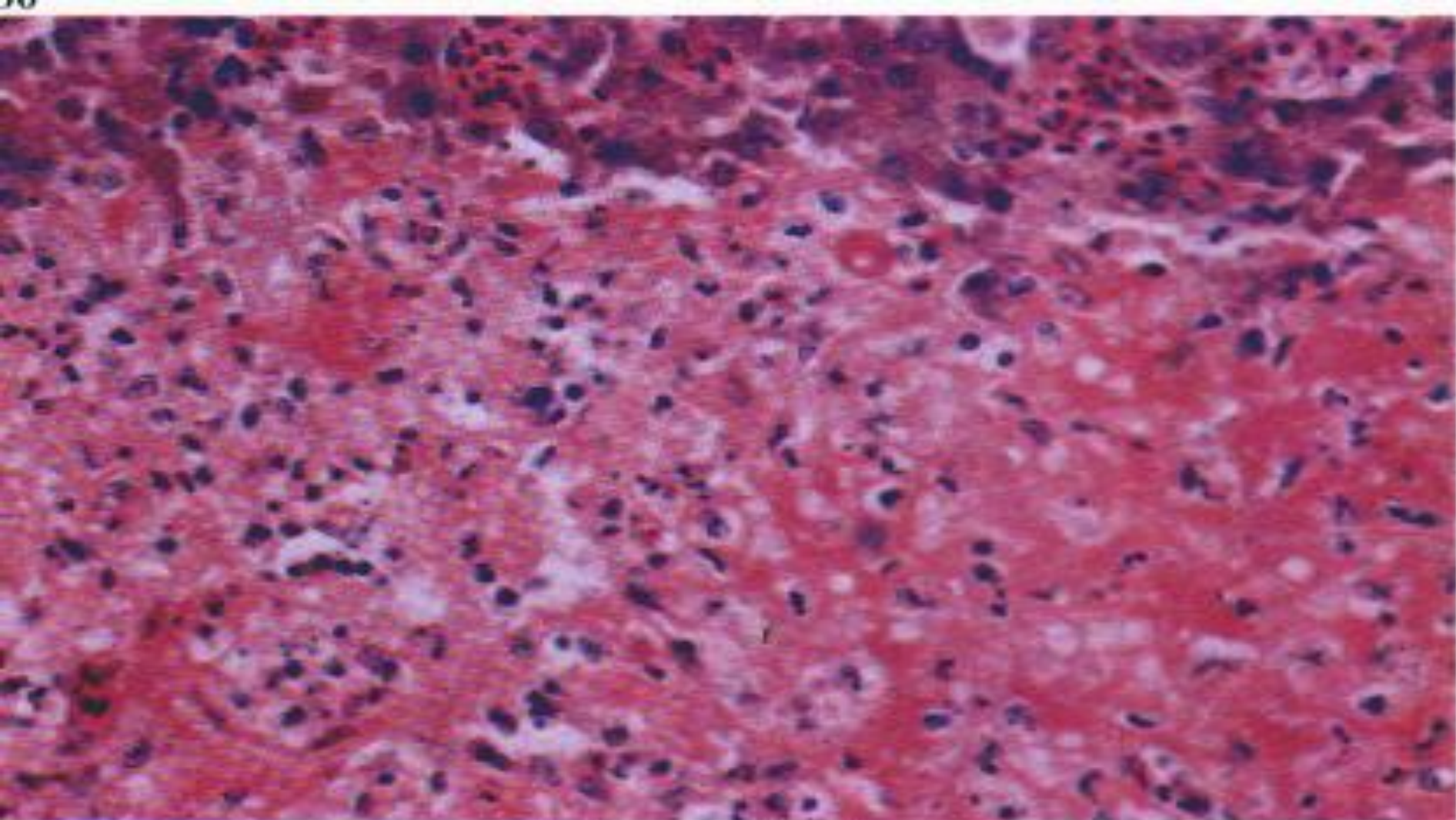


Kidney (Salmonellosis)
lymphocytic interstitial nephritis



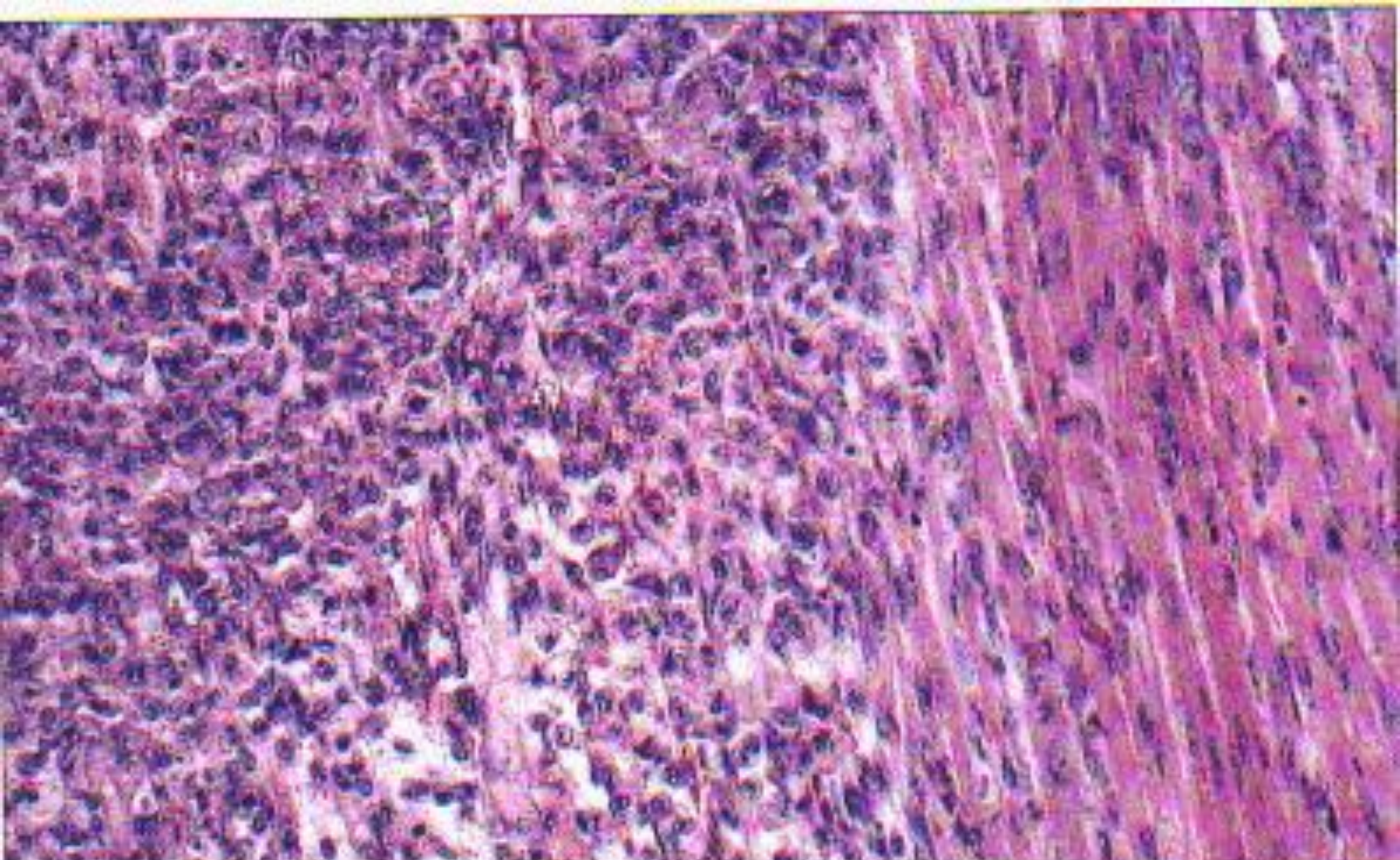
Cerebellum (Salmonellosis)

suppurative meningoencephalitis



Salmonellosis

Focal necrosis in the liver



Heart (Salmonellosis)

focal granulomatous myocarditis with infiltration of macrophages and myocardial necrosis