Malaria - *Gross Microscopic Pathology*

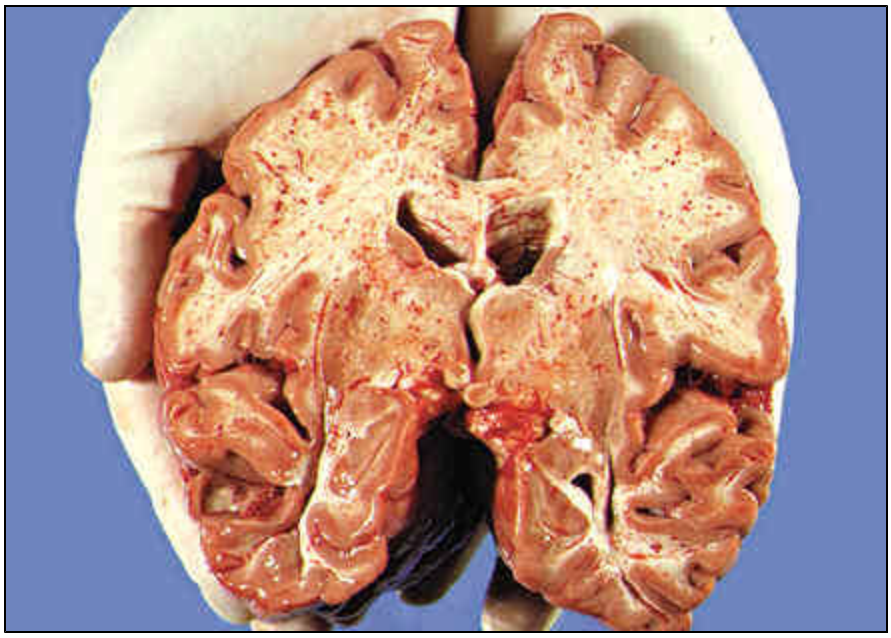

FIG 3.18

Cerebral Malaria
Cerebral malaria presents with a variety of neurological manifestations. It may as acute psychosis, fitting or abnormal behaviour. These can progress quite quickly to coma and death.Very often the post mortem examination of the brain shows no macroscopic abnormality. The classical abnormality however, is the presence of multiple petechial haemorrhages throughout the white matter.

Figure 3.18. This is a slice of the brain from a 60 year old Australian man who acquired his infection while living in Papua New Guinea. It shows the classical macroscopic appearance of cerebral malaria. The correct diagnosis was not made during his life. The symptoms of organic disease were obscured by the fact that he had been in a state of alcoholic intoxication for quite a few days before death. A result of the "farewell parties"!

Figures 3.19, 3.20 and 3.21 are microscopic sections from the brain shown in **Figure 3.18**.

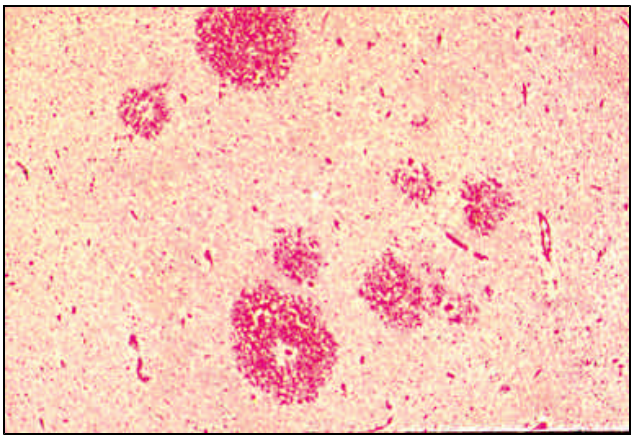

FIG 3.19

Figure 3.19 is a low power view of the areas of haemorrhage.

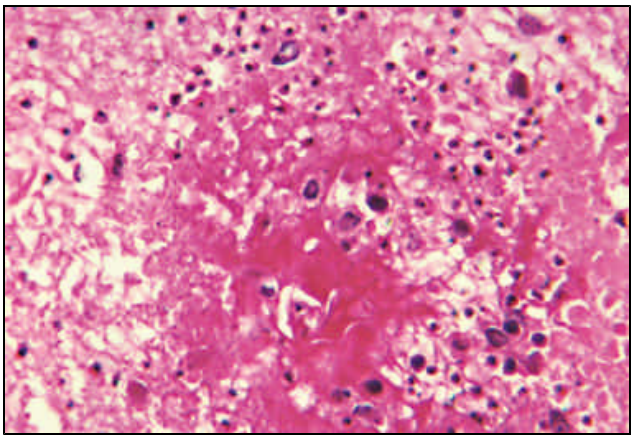

FIG 3.20

Figure 3.20 is a high power view of one of these areas. It shows thrombosis of a vessel, destruction of the vessel wall and haemorrhage into the brain substance. Many of the red blood cells contain ring forms of *P. falciparum***.**

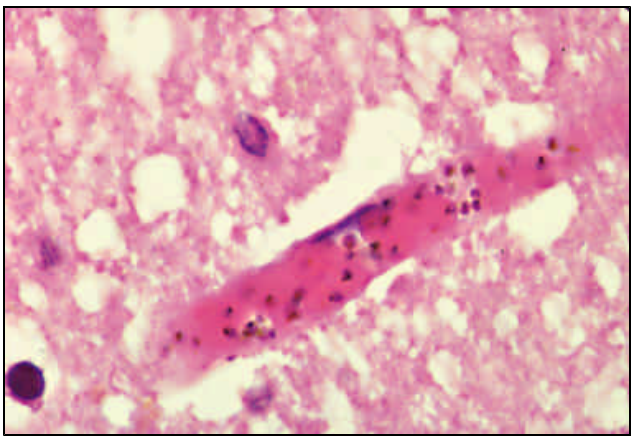

FIG 3.21

Figure 3.21 shows a cerebral capillary in which the red blood cells contain malaria pigment and ring forms of *P. falciparum*. This appearance can be seen in the capillaries throughout the brain. This is the usual finding in patients dying of cerebral malaria when no macroscopic abnormality can be seen in the slices of post mortem brain.

FIG 3.22

Other Complications of Malaria

(a)Tropical Splenomegaly (Big Spleen Disease)

Splenic enlargement occurs during all acute attacks of malaria. When the attack subsides the spleen also returns to normal size. In some people living in areas of high endemicity of malaria the spleen remains enlarged. In a small proportion of people the spleen becomes very large indeed. **Figure 3.22** shows a young woman in Papua New Guinea with a very big spleen. People with spleens of this size develop the syndrome of Tropical Splenomegaly in which they suffer from a chronic anaemia with very low haemoglobin values and pancytopaenia. The anaemia is not improved by anti-malarial treatment. Such enlarged spleens are in danger of being ruptured from trauma to the abdomen.

(b) Spontaneous Abortion

An acute attack of *P. falciparum* infection in a pregnant woman may result in spontaneous abortion. Histological examination of the placenta of such aborted foetuses shows the presence of ring forms of the parasite in the red blood cells in the maternal circulation (**Figure 3.23)**.

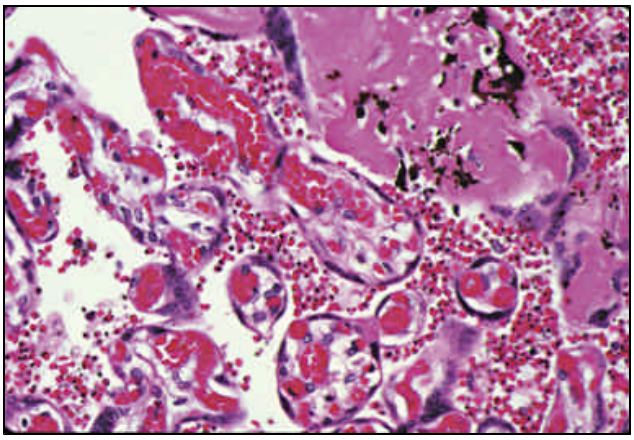

FIG 3.23

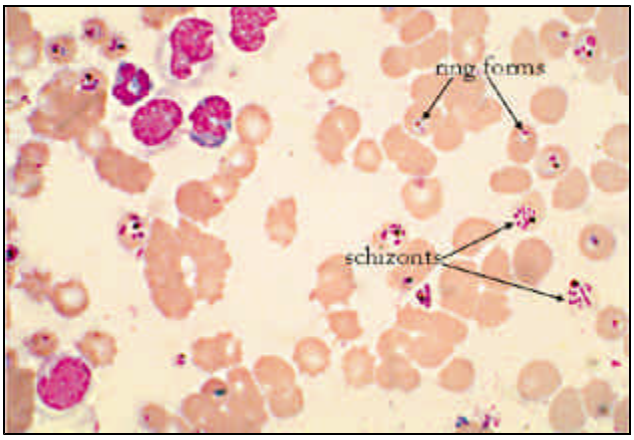

FIG 3.24

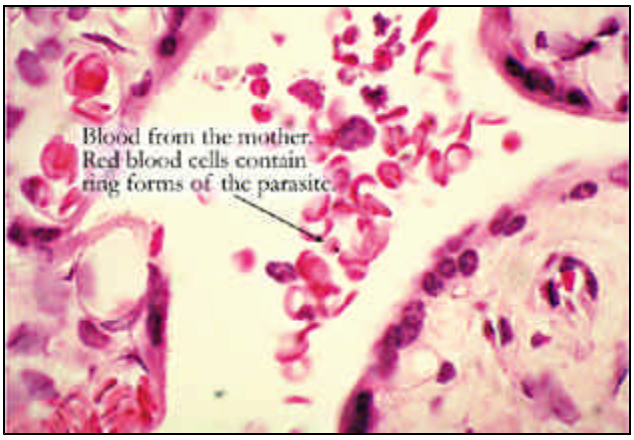

FIG 3.25

Figure 3.24 This is a higher power view of **Figure 3.23**. **Figure 3.25** is a touch preparation from the above placenta before formalin fixation.That is, glass microscope slides were touched on the surface of the placenta and stained with Giemsa stain. Ring forms and schizonts can be seen.

Schizonts are not seen in peripheral blood smears in malaria except as a pre-terminal event. If schizonts are seen in peripheral smears the patient will die quite quickly unless treatment is started as a matter of urgency.

page three return page five