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NEUROPATHOLOGY REPORT:

Name: David Samuel ROSE

Institute Case No: 97/6054

Macroscopic examination:

The brain was examined after fixation in formalin and weighs 1453 g. There is a small amount of solid blood adherent to the outer surface of the dura overlying the left temporal and parietal lobes. The dura shows no other focal abnormalities. The sagittal and horizontal sinuses are patent. Thin subarachnoid haemorrhage is present over the anterior surface of the dorsal left frontal lobe (5 x 4 cm), extending to the midline, and on the inferior surface of the left temporal lobe 2.5 cm posterior to the temporal pole (2 x 2 cm). There are multiple cortical contusions extending over 5 x 3 cm on the inferior surface of the right frontal lobe. Medially they extend to within 0.5 cm of the midline; laterally they extend onto the inferior portion of the right inferior frontal gyrus, covering an area of 2.5 x 1.4 cm. Contusions are also noted:

a) on the inferior and middle temporal gyri on the infero-lateral surface of the right temporal lobe (5.5 x 3.0 cm), extending to within 2.5 cm of the temporal pole with adjacent thin subarachnoid haemorrhage;

b) on the crest of the left middle temporal gyrus (3 x 2.2 cm) extending to within 3 cm of the temporal pole.

There is grooving of the left and right uncus 0.5 and 0.7 cm from the medial edge respectively. There is some tissue disruption but the absence of associated haemorrhage suggests that this occurred post mortem. The vessels at the base of the brain are normally arranged and are free of atheroma. No aneurysms are identified. The gyri are normally arranged and without atrophy. The cranial nerves are intact. The brainstem and cerebellum shows no external abnormalities.

The brain stem is separated from the cerebrum through the rostral midbrain and the cerebral hemispheres are sectioned in the coronal plane at approximately 1.0 cm intervals. The contusions noted externally are confirmed. The right inferior frontal contusions cover a cross section area of 3.5 x 1.2 cm and extend into the underlying white matter. There is some associated petechial haemorrhage in the deep white matter of the right frontal pole. Contusions are also present on the inferior and infero-lateral surface of the right temporal lobe measure up to 1 x 0.7 cm in maximum cross sectional extent. There is generalised pallor and white matter oedema with some blurring of the grey/white junction. The cortical ribbon is of appropriate thickness and apart from the contusional haemorrhages there are no focal abnormalities. The ratio of cortical grey matter to white matter volume is normal. The ventricles are symmetric and of normal size. The striatum, thalamus, hypothalamus including the mamillary bodies, globus pallidus, amygdala and hippocampus show no gross abnormalities. No haemorrhage is noted at the site of the uncal grooves. A small cavum septum pellucidum is noted anteriorly.

The cerebellum is separated from the brain stem and sectioned in the parasagittal plane at 0.5 cm intervals. The superior and inferior vermis and cerebellar hemispheres, including the dentate nucleus are somewhat pale. There is white matter oedema but no focal abnormalities. The brain stem is sectioned in the transverse plane at 0.5 cm intervals. In the rostral half of the midbrain tegmentum, there is a 1.2 x 1.3 cm midline area of haemorrhage which extends from the inter-peduncular fossa to within 0.1 cm of the aqueduct. The aqueduct is compressed to a vertical slit. In the caudal midbrain, extending into the pons, there is irregular tegmental haemorrhage in the decussation of the superior cerebellar peduncles. There is a 0.4 x 0.4 cm haemorrhage in the dorso-lateral quadrant of the rostral pons on the left, medial to the superior cerebellar peduncle, and a 0.3 x 0.15 cm midline haemorrhage, extending to within 0.1 cm of the aqueduct and 0.8 cm caudally. In the median part of the dorsal basis pontis, extending rostro-caudally over a distance of 1.6 cm there is a wedge-shaped area of grey discolouration The base of the wedge is directed towards the tegmentum and the apex extends to within 0.6 cm of the ventral surface at the level of the fifth nerve, with some extension to the right into the middle cerebellar peduncle. Apart from generalised pallor the medulla shows no gross focal abnormalities. The fourth ventricle is of normal size.

Microscopic Examination:

Unless otherwise stated, sections from the right side of the brain are examined. Sections of anterior superior frontal cortex (Brodmann area 9), inferior frontal lobe, infero-lateral temporal lobe, left middle temporal gyrus, hippocampus, amygdala, midbrain, pons, medulla, cerebellar vermis and hemisphere, stained with haematoxylin and eosin/luxol fast blue are examined.

Anterior superior frontal cortex (A):

There are several small areas of intra cortical pallor and vacuolation consistent with oedema. There is a small amount of subarachnoid haemorrhage. No unequivocal hypoxic/ischaemic change is identified.

Inferior frontal lobe (Q):

Recent contusion with subarachnoid haemorrhage and perivascular haemorrhages in the cortex and underlying white matter.

Left middle temporal gyrus (P), and right infero-lateral temporal lobe @LGN (R):

Recent contusion with subarachnoid haemorrhage and perivascular haemorrhages within the cortex.

Hippocampus (E):

Apart from some subarachnoid haemorrhage, no significant abnormality identified.

Amygdala (H):

Some tissue disruption with minimal associated haemorrhage, most consistent with post mortem damage.

Midbrain (J):

There are several perivascular haemorrhages in the peri-aqueductal grey matter on the right and in the interpeduncular fossa with haemorrhage into the right oculomotor nucleus.

Pons (K,L):

Multiple recent haemorrhages in the tegmentum and dorsal basis pontis.

Medulla (M) and cerebellar hemisphere (N):

No significant abnormality identified.

Diagnosis:

1. Multiple cerebral contusions, right inferior frontal, lateral temporal, bilateral.
2. Primary traumatic brain stem haemorrhage, rostral tegmentum and dorsal basis pontis.
3. Traumatic subarachnoid haemorrhage.
4. Diffuse cerebral oedema.
5. Early decompositional change.

Dr M Rodriguez
Neuropathologist
16 April, 1998 (cc)