

## EMBOLI OF CEREBRAL TISSUES IN THE LUNGS\*

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### SUMMARY

*The literature of cerebral tissue lung embolism is briefly reviewed and a case in which this condition occurred is described.*

Cerebral tissue emboli in the lungs resulting from extensive lacerations of the brain as a result of fractures of the skull are rare. Cases have been reported by McMillan<sup>1</sup> and others, the particulars of which are summarized in Table I. Emboli consist mainly of glial tissue but neurones and

vascular tissue may also be found. Cerebellar tissue emboli have been reported in one case.<sup>2</sup> Valdes-Dapena and Arey<sup>3</sup> report the presence of emboli of cerebral tissue in the lungs of newborn children with birth trauma. Tears of the tentorium cerebelli were found in 3 out of the 4 cases. The authors emphasize that this condition may be found in the absence of external evidence of injury. The tissue heterotopia found in congenital brain abnormalities must be considered in the differential diagnosis of cerebral tissue embolism in the newborn. Trauma to the foetal brain early in gestation may be an aetiological factor. This heterotopic brain fragment is found in the lung tissue and not in the pulmonary artery as in the case of emboli; it has a limited period of growth.<sup>3</sup>

\*Based on a paper presented at the 47th South African Medical Congress (M.A.S.A.), Pretoria, July 1969.

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TABLE I. SUMMARY OF LITERATURE CONCERNING PULMONARY EMBOLI OF CEREBRAL TISSUE

Year	Author	Age	Clinical data
1926	Merkel <sup>4</sup>	47 yr	Fell from a ladder
1936	Krakower <sup>5</sup>	1 yr 11 mth	Fell on a cement floor from a height of 4 m
1940	Walcher <sup>6</sup>	4 yr	Motor-car accident
1954	Oppenheimer <sup>7</sup>	42 yr	Fell down stairs
1955	Nunes <sup>8</sup>	5 yr	Motor-car accident
1956	Gardiner <sup>9</sup>	10 min	Delivery aided by forceps
1956	McMillan <sup>1</sup>	(a) 71 yr (b) 52 yr (c) 19 yr	Fell from a ladder Motor accident Fell from a tree
1963	Tryfus <sup>10</sup>	10 min	Footling delivery with Veit-Smellie manoeuvre
1964	Pisch <sup>11</sup>	15 yr	Head crushed by weaving machine
1964	Tackett <sup>2</sup>	64 yr	Fell from a height of 5 m
1967	Valdes-Dapena <sup>3</sup>	(a) 1 hour (b) 16 min	Breech extraction with Piper forceps Tucker McClaine forceps
1969	Present case	40 yr	Motor-car accident

#### CASE REPORT

A 40-year-old non-White pedestrian was struck by a motor-car. He died 2 hours after admission to hospital, and about 2½ hours after the accident. Postmortem examination revealed minimum external injuries. The skull showed extensive fractures in the right occipital area extending into the posterior fossa, and laceration of the right transverse and sigmoid venous sinus, continuous with tears of the superior aspect of the tentorium cerebelli, the arachnoid and pia mater. Extensive contusions of the brain were found on the posterior and inferior aspect of the right occipital lobe, as well as bilateral subdural haemorrhages over the cerebrum and small haemorrhages in the brain stem and midbrain. Both lungs were well expanded and revealed subpleural haemorrhages. On incision, the cut surfaces showed emboli consisting of a grey-white material and blood situated in the pulmonary arteries. No brain tissue was demonstrable in the jugular veins or the right side of the heart.

Microscopic examination of lung tissue confirmed the presence of cerebral tissue emboli in several branches of the pulmonary arteries (Figs. 1-3).

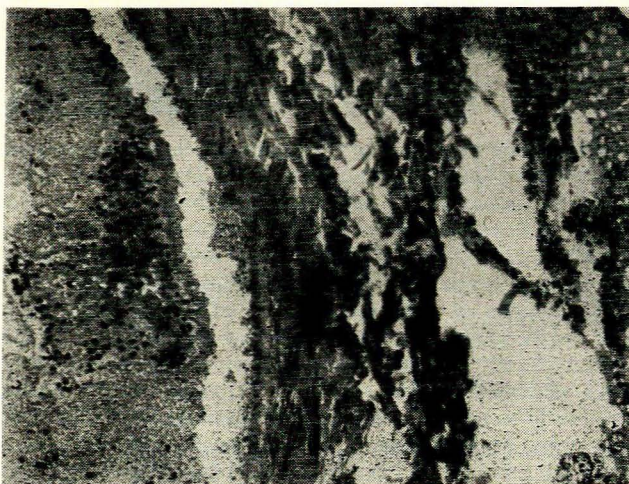


Fig. 1. Photomicrograph of lung with glial tissue in a pulmonary artery on the left (H & E).

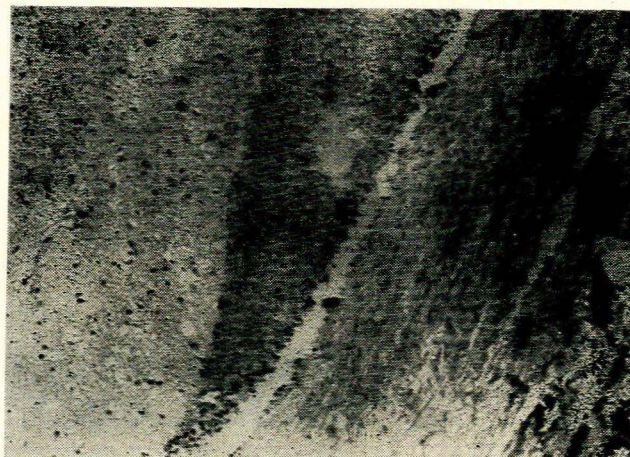


Fig. 2. Photomicrograph of the lung with cortical and medullary cerebral tissue in a pulmonary artery (H & E).

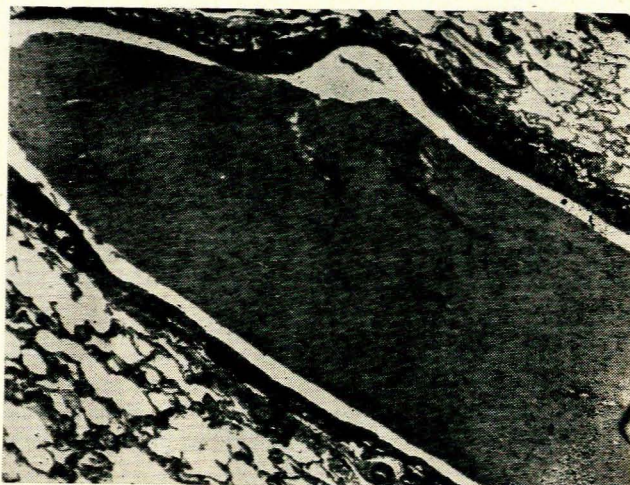


Fig. 3. Longitudinal section of pulmonary artery with cerebral tissue in the lumen (PTAH).

The well-documented though rare entity of cerebral tissue emboli in the lungs resulting from head injuries sustained during motor-car and aircraft accidents and in the 'battered baby syndrome' is of medico-legal importance, being indicative of injury sustained during life.

I wish to thank the Secretary, State Health Department, for permission to publish; and Mr de Swart of the Department of Pathology, University of Pretoria, and the Photography Unit of H. F. Verwoerd Hospital for their collaboration.

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