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Four Lobes on the Right Side.

BY

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Medical Registrar, Philadelphia Hospital.*



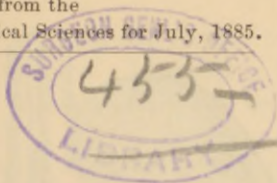
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EDWARD  
W. W.

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## AN ANOMALOUS HUMAN LUNG, HAVING FOUR LOBES ON THE RIGHT SIDE.<sup>1</sup>

By WILLIAM A. EDWARDS, M.D.,

Assistant Demonstrator of Clinical Medicine in the University of Pennsylvania ;  
Medical Registrar, Philadelphia Hospital.

MARY O., Irish by birth, æt. 62, widow, mother of four children, came under my care just a year ago, suffering from some slight ailments inevitable at her period of life. The patient's vital powers were at a low ebb, and she finally succumbed to senile asthenia two and a half months after I first saw her. A post-mortem examination was made, not of course to verify the ante-mortem diagnosis, but in the routine line of duty ; our work was rewarded by securing this extremely interesting and unique specimen. All the organs were destitute of marked pathological lesions, but upon opening the thorax an unusual condition of affairs was made apparent, well illustrated in the accompanying drawing, in which the lungs are represented as widely stretched apart, increasing the mediastinal space by several inches, thus exposing the heart and great vessels, and giving a better view of the accessory lobe.

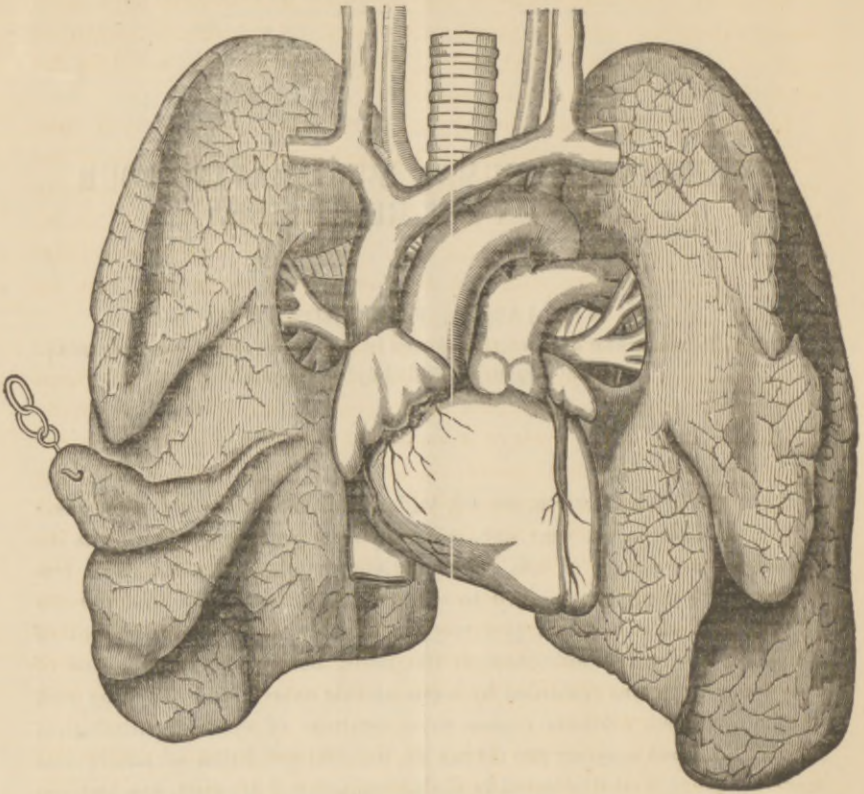
The left lung did not deviate from the normal standard, but the right presented *four well-marked lobes*, as shown in the accompanying drawing.

The upper lobe was normal, bearing the proper relative proportion to the remaining parenchyma ; the middle lobe was somewhat decreased in size, as was also the lower, and between the two may be seen the anomalous fourth lobe, which was formed at the expense of the second and third lobes together with an absolute increase of lung tissue, as the other lobes are not diminished enough to form the new lobe.

This supernumerary lobe was quite as long as a man's hand from the wrist to the tip of the second finger, measuring from six and a half to seven inches.

At its widest part it measured two and a quarter inches, tapering to a quarter of an inch, and finally to the thin border as in the other parts. Its

<sup>1</sup> Exhibited before the Philadelphia Pathological Society, April 9, 1885.



tissue was perfectly normal and functionally active. Its histological structure was the same as the rest of the lung, and it apparently did its work equally as well.

It is almost needless to remark that no evidence of this condition was revealed ante-mortem, nothing had ever called attention to the lungs, and of course the diagnosis could not have been made even by the most expert and careful diagnostician.

In illustration of the rarity of this anomaly, I am able to cite the following authorities:—

Prof. Joseph Leidy writes me “I have never seen such a lung, nor do I remember having read of one.” Prof. William Pepper “has never seen such a case, and recalls no record of one.” Prof. William Osler “cannot recollect a similar case occurring under my observation,” but sends me a record of the following anomalies:—

“Case I. In which the right middle lobe was only a notch, the lung having but two lobes on the right side.

“Case II. The upper lobe of the left lung was divided by a deep fissure extending internally nearly to the root. Anteriorly to within an inch and a half of the usual fissure. Another fissure was noted in the same lobe three inches from the apex.”

It will thus be seen that the left lung in this case was made up of three lobes, the deviation from the normal standard being at the expense of the upper lobe entirely. Dr. H. F. Formad “has seen a lung presenting three lobes on each side, but never one as above described.” Prof. J. M. Da Costa “has never seen a similar case.” Dr. W. S. Forbes writes that “In a long experience with the cadaver I have never met such an anomaly.”

A careful search through a number of anatomical works failed to reveal a like condition, with one or two exceptions, for example, the magnificent work of Braune (*Topographisch Anatomischer Atlas*, Dr. Med. Wilh. Braune, Leipzig, 1875), where a number of thoracic abnormalities are depicted, a case like ours receives no mention. Wm. Cowper (*Anatomy of the Human Body*, London, 1697, Table xxiv.) describes but two lobes to each lung, calling them the right and left anterior lobes, and the right and left posterior lobes. Weckel (*Handbuch der Path. Anat.*, Bd. i. page 479) remarks that Rhodius states that Mollinetta (*Mantissa Anat. Obser. xi.*) once found in a very large man the lungs divided into four lobes like the ruminants. The *Anatomy* of Harrison Allen devotes more space to these anomalies than most other anatomical works, although even here it is but a few lines.

Dr. Collins (On Accessory Lobes of the Human Lungs, by Edw. W. Collins, M.D., *Trans. Royal Irish Academy*, vol. xxv. part vii. p. 329, Dublin, April 13, 1874) records a threefold abnormality in the right lung, pleura and vena azygos. Immediately above the posterior part of the root, in the angle between it and upper portion of the right lung, was to be seen an accessory lobe, somewhat pyriform in shape, with a broad peduncular attachment. Its measurements were four inches in length by two and a half in breadth at its widest part. Breadth of peduncle is one and a half inches. The lobe laid beside and upon the bodies of the five upper dorsal vertebræ in an accessory pleural pouch, which communicated with the general pleural cavity around the peduncle of the lobe. The pleural duplicate was continuous with the costal portion of the pleura above and along its outer border; along its inner border with the mediastinal. Its lower border alone was free; the inner free margin contained the azygos vein, this vein had an anomalous distribution, the course of which it is not necessary to describe. The trachea was separated from the spinal column for a considerable space by the pleural pouch.

H. A. Wrisberg, in 1777, laid before the Royal Society of Göttingen an anomaly similar to the one above recorded. (*Cf. Observationes Anatomicae de venâ azygâ duplici aliisque hujus venæ varietatibus*, in *Novis*

*Commentariis Soc. Reg. Scient.*, Göttingen, anno 1777, tom. viii. p. 14.) Bouchaud put on record another case before the Anatomical Society of Paris, in 1862.

Lately four instances of accessory lobes above the root of the right lung have been noted by Dr. Chiene in Edinburgh, Prof. Cleland in Galway, and Prof. Wenzell Gruber in St. Petersburg.

Wrisberg's case is worthy of special note as being the only recorded instance of an accessory lobe of the left vena azygos. Prof. Cleland explains the fact of the accessory lobe appearing on the right side, which appears to be consonant with the development of the venous system as follows: Early in fetal life from some such cause as a slight adhesion of the lung to thoracic wall, or less probably, an undue curvature of the embryo, the azygos vein as it is drawn downwards at a right angle to its original transverse direction by the descent of the heart, dragged down around it a fold of the pleura, thus deeply notching the lung instead of slipping behind it.

Comparative anatomists, says Collins, from the time of Cruvier, have shown that a fourth lobe upon the right side, which makes its first appearance in many of the quadrupeds, is very constantly found in other mammals occupying a defined position, between the pericardium and diaphragm in one direction, and between the inferior vena cava and the spine in the other, a position due to the altered situation of the pericardium.

An accessory lobe of the right lung in man lying below the root on the inner side, and bearing a tolerably strict homology to this so-called lobus impar, which has been regarded by some zoologists as forming a distinctive difference between the lungs of quadrupeds and man, has been made the subject of a memoir by M. Pozzi (*Cf. Revue d'Anthropologie dirigée*, par P. Broca, 1872, p. 443), and was the *only case* on record in man, prior to my describing this *second case*.

A similarly situated accessory lobe upon the left side has been described in detail by Prof. Rektorzik of Vienna (*Cf. Zeitschrift der K. K. Gesellschaft der Aerzte der Wien*, 1861, No. 1). This accessory lobe was wholly isolated from the remainder of the lung, unexpanded, having no connection with the bronchus, though it contained collapsed alveoli, and bronchia lined with ciliated epithelium. It was from a girl who survived her birth only fourteen days.

In Prof. Wenzell Gruber's case besides the accessory lobe of the vena azygos, the remainder of the right lung was divided into four lobes by a cruciform fissure.

Mr. Laurance Humphrey exhibited before the Cambridge Medical Society<sup>1</sup> an abnormal structure, which he had removed from the body of a child a year old who died of tubercular meningitis and acute general

<sup>1</sup> British Med. Journal, April 25, 1885, p. 842.

tuberculosis. It was lying in the left pleural cavity, in the vertebral groove between the base of the lung and the diaphragm, and was suspended by a thin pedicle of bloodvessels and connective tissue to the descending aorta, from which it received its blood supply. It had no connection whatever with the lung, neither was there any communication with or attachment to any part of the air-passage. It measured about two inches long by one broad; was flattened at the posterior surface, and rounded anteriorly, and had the appearance of a foetal lung, but was much harder. Sections under the microscope showed lung tissue containing bronchioles lined with columnar epithelium, and thick-walled unexpanded air-vesicles, with a plentiful supply of bloodvessels; also large masses of caseating tubercle with well-marked giant cells.

H. Handford<sup>1</sup> records a case of a man, *æt.* 40, who died from chronic epilepsy. At the autopsy the following condition was revealed: Lying upon the pericardium and distinct from the rest of the lung about one inch and a half, was a lobe of lung tissue one inch and a quarter long, three-quarters broad, and nearly one-half thick in the centre. It was attached to the anterior margin of the upper part of the lower lobe of the left lung by a double fold of pleura, in which were a few vessels. It was light in color, and not much pigmented. It contained plenty of air. No microscopic examination was made.

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<sup>1</sup> British Med. Journal, May 2, 1885, p. 926.











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