BRONCHOSCOPY IN HÆMOPTYSIS

By P. G. GERLINGS (Amsterdam)

IT is not my intention to advocate bronchoscopy in every case of hæmoptysis, for there are numerous causes for the expectoration of blood which can be established with certainty by physical, roentgenological or bacteriological methods. In a number of cases, however, these methods leave us ignorant or doubtful about the underlying cause. If, moreover, no lesions are found in the nose and nasal sinuses, bronchoscopy is indicated.

A. Habitual tracheal hæmorrhage from venectasies.

CASE I.—Male, aged 33. Admitted to hospital in March, 1936. Two weeks ago blood had been expectorated for the first time. Without any obvious external cause he suddenly experienced a sensation as though his throat were screwed up, upon which some blood with mucus was expectorated. No severe degree of coughing, no fever, nor pain. The hæmorrhage recurred for the last fortnight almost every day. It was always preceded by a choking sensation in the thorax or throat, whereupon something was felt to rise up in the throat, and a small quantity of blood, partly coagulated and dark, partly bright red, and mucus were produced. The patient had always been healthy in every other respect. There is no tuberculosis in his family. Clinical and roentgenological examination of the lungs shows no abnormality; nor does the examination of the nose, sinuses and pharynx. Roentgenography of the lungs after injection of lipiodol gives a normal picture.

Bronchoscopy (local anæsthesia with 2 per cent. pantocain-adrenalin 1/1,000).—Just below the vocal cords, on the anterior wall of the trachea a number of venectasies were found, which bled readily. Otherwise no abnormalities in the trachea and bronchi. The venectasies were cauterized with silver nitrate.

Subsequent course: after the treatment no further hæmorrhage has occurred.

A second case, observed by us in 1933, showed the same clinical picture; on endoscopy this showed a hæmorrhagic tracheitis.

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CASE II.—Male, aged 44. Admitted to the department in October, 1933, for recurrent hæmoptysis, for which no internal cause had been found. During examination the patient had a coughing fit and produced a fairly large quantity of blood. The blood was seen to run down along the posterior pharyngeal wall from the nasopharynx. As the bleeding persisted and doubt arose as to whether the blood originated from the trachea or from the nose, the latter was plugged by Bellocq's method ; the bleeding, however, did not stop. On repeated intramuscular injection of Coagulen the hæmorrhage ceased after two days. The lungs showed no abnormality ; the sputum was negative for tubercle.

On endoscopy numerous venectasies and much thick, sticky mucus on the surface were found in the larynx and trachea. This patient has since been re-examined, and found to have had only a few hæmorrhages since his discharge ; the local condition, however, was unaltered.

CASE III.—Male, aged 49. This patient had a severe hæmoptysis in 1932, which ceased completely only after two weeks, and for which he was nursed for five months in a ward of the Binnengasthuis. An obvious cause (tuberculosis ?) could not be found ; in the lungs, only slight fibrous alteration was found in the upper lobes ; the leucocyte count and sedimentation rate were normal. After his discharge we saw the patient because of throat complaints (mucus discharge) ; we found on examination venectasies on the pharyngeal wall, which were cauterized. The patient, a dock worker, hereupon resumed his work. In December, 1933, some blood was expectorated on one occasion, but since then he has remained well up to February, 1935, when he again had a hæmorrhage. On laryngoscopy the blood was distinctly seen to arise from the trachea, the nose and nasopharynx being free. Because of the considerable quantity of blood that was lost (sometimes half a basin in a night) bronchoscopy was carried out. We found on both sides diffuse blood in the bronchial branches ; in the left main bronchus, medially, a thickening of the mucous membrane was seen with a dark red, readily bleeding spot (venectasy), which was cauterized with lactic acid. The hæmorrhage, however, recurred, so that a second bronchoscopy was done and the same spot was cauterized with chromic acid.

Subsequently for several days dark brown sputum was produced ; the general condition was excellent, and the patient was soon discharged. The roentgenological examination of the lungs showed nothing particular ; the blood picture was normal.

Hæmoptysis is an occurrence so frequent in pulmonary tuberculosis that it can be easily understood that this patient

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was looked upon as suspect of this disease for so long. Moreover recently Bezançon[1] brought forward the occurrence of cases of pulmonary tuberculosis, in which for several years a recurrent hæmoptysis remains the only morbid symptom, until other signs appear which settle the diagnosis surmised before.

The case records of these three patients typically illustrate the picture of the so-called "*habitual tracheal bleeding from venectasies*". Massei,[2] in 1898, published the record of a patient who coughed up considerable quantities of blood (up to 100 c.cm. a day) without any sign of pulmonary disease being found. On laryngoscopy he discovered numerous dilated blood vessels in the mucous membrane of the upper portion of the trachea, which proved to be the cause of the repeated hæmorrhages. Pisenti[3] (1899), Avellis[4] (1901), and De Rosa[5] (1903) observed similar cases and called them "hæmorrhagic catarrh of the trachea", but from their description it is clear that the bleeding started from venectasies. In 1911 Brünings[6] and Ephraim[7] each mention one case, and Freystadtl[8] in 1920 gives a minute description of the picture which occurred in two cases. Later (1924) he adds two fresh cases. A patient of Mantschik[9] (1922) is widely known among phthisiologists and is repeatedly cited in literature. In recent years, mainly in French papers, the picture is pointed out (Ombrédanne[10], Soulas,[11] Leroux,[12] Mounier-Kuhn,[13] Garmier[14]), so that the following review of the picture is based on a fairly extensive case material.

The only sign is hæmorrhage; the quantity is generally considerable; cases of a pint a day are on record. It mainly occurs suddenly, during rest as well as on severe exertion, and is accompanied by a coughing fit. It is almost always pure blood, bright or dark red, and may or may not be admixed with some mucus, never frothy. The hæmoptysis may recur daily for weeks, by which the patients may become anæmic in the long run. Hæmorrhages dangerous to life are not on record. Gidionsen's[15] case of a fatal bleeding from varices round a large tuberculous ulcer do not in my opinion belong to this class. Recurrence appears to be observed frequently. Most of the cases are found in middle aged people. Leroux claims that a tracheo-bronchoscopic examination should be carried out in isolated as well as recurrent hæmoptysis with tubercle-negative sputum and without distinct abnormalities on the X-ray picture of the lung. By this practice cases as

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described by Finder[16] can be avoided, in which two young people had been treated for a long time as tuberculosis patients, whilst they suffered from venectasies of the trachea. If endoscopy reveals a normal mucous membrane, the suspicion of tuberculosis is justified. Leroux in such a case found tubercle bacilli in the sputum after several years. However a combination of tuberculosis and venectasies has also been observed! (Freystadtl.)

The mucosal changes that are found consist of a diffuse hyperæmia or distinct venectasies. A definite spot that is seen oozing blood is conclusive. The place of predilection is the anterior wall of the trachea, just below the vocal cords, but the lesion also occurs on the posterior wall and near the bifurcation. Freystadtl in 1924 could not cite cases on record of hæmorrhage from venectasies in the bronchus. In Garmier's thesis some cases are described, and our patient (Case III) is a further instance of this occurrence.

There is no unanimity as to the cause of these venectasies. Next to congenital weakness of the vascular walls some importance must be attributed to inflammation of the mucous membrane. Many authors, in analogy with the venectasies on the nasal septum, speak of " epistaxis tracheo-bronchique ". Moritz Schmidt,[17] in a few cases, observed in elderly people a hæmorrhage from a dilated vessel in the trachea as a result of arteriosclerosis. In vascular back-pressure, general as well as local, the larynx may show diffuse or localized vasodilatation, which Mackenzie[18] labelled " phlebectasia laryngea ". An analogous origin is possible in the trachea. The venectasies situated just below the vocal cords can be seen on indirect laryngoscopy ; for the other situation only endoscopy will avail. This procedure does not produce any risk if carried out under local anæsthesia. The advantages of Haslinger's armamentarium has been pointed out on a previous occasion.[19]

Hæmoptysis is by no means a contra-indication for bronchoscopy. Just as in the treatment of venectasies on the nasal septum, cautery by way of the bronchoscope with trichloracetic acid or chromic acid is advisable. Silver nitrate 10 per cent. is inactive, as is in our experience lactic acid. Inhalation of adrenaline is rarely of any use.

B. Benign tumours of the bronchi have been considered to be of very rare occurrence until recent years (Haslinger,[20] Ellen Patterson[21]). I have collected the cases observed by

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Benign Tumours of the Bronchi.

Author.		Sex.	Age.	Duration of symptoms.	Hæmoptysis.	Asthma, Cough, Dyspnœa.	Pulmonary lesion.	Bronchoscopy (localization).	Microscopy.	Treatment.	Result.
von Eicken	1907	F.	41	—	—		infiltration left lower lobe	left main bronchus	chondroma	removal	recovery
Spiess	1910	M.	47	3 years	—		stenosis right main bronchus	right ,, ,,	,,	,,	,,
Jackson	1915	M.	16	6 weeks			—	l. upper lobe ,,	fibroma	,,	,,
Pfeiffer	1920	F.	27	2 years		asthma	atelectasis l. lower lobe	l. main ,,	,,	,,	,,
Wessler-Jackson	1923	M.	28	months			,, l. lung	l. ,, ,,	,,	,,	,,
Yesberg	1926	M.	6	6 months			valvular stenosis l.	l. ,, ,,	polypus (fibroma ?)	,,	,,
Kernan	1927	M.	50	5 years		asthma	—	r. ,, ,,	lipoma	—	,,
Zinn	1927	M.	52	7 years(?)		asthma	pneumonia ? empyema ? l.	l. ,, ,,	fibroma	removal	,,
Syme	1927	F.	42	—			—	r. ,, ,,	papilloma	—	
Burrel-Trail	1928	F.	23	1 year	+		no abn. on X-ray picture	l.lower lobe ,,	fibroma	removal	,,
Myerson	1928	M.	47	1½ years	+		bronchiectasis l.	l. main ,,	fibrolipoma	,,	,,
Leman	1929	F.	36	—		cough	X-ray pict. shadow mediast.	r. ,, ,,	polypus (fibroma ?)	,,	improvement
Ashbury	1929	M.	40	—	+		recurring massive collapse	l. ,, ,,	fibroma	,,	recovery
Orton	1932	—	6	—		dyspnœa		l. ,, ,,	papilloma	,,	,,
Zamora	1932	—	—	—				l. ,, ,, + trachea	papilloma	,,	,,
Miller	1934	F.	23	9 months		cough	atelectasis l. upper lobe	l. upper lobe bronchus	adenoma	,,	bronchiectasis
Wessler-Rabin	1932	M.	28	1 year	—		,, l. lung	l. main ,,	fibroma	,,	recovery
,,		F.	35	13 years	+		,, r. middle lobe	r. middle lobe ,,	adenoma	,,	,,
,,		F.	18	5 years	+		,, r. lower lobe	r. ,, ,,	,,	removal impossible owing to hæmorrhage	
,,		M.	26	3 years	+		,, l. ,, ,,	l. ,, ,, ,,	,,	removal + radium	
,,		M.	48	1½ years	+		infiltr. l. ,, ,,	l. ,, ,, ,,	fibrolipoma	removal	recovery
,,		F.	30	11 years	+		atelectasis l. lung	l. main ,,	adenoma	—	—
,,		M.	64	30 years	+		,, l. upper lobe	l. ,, ,,	,,	—	—
,,		F.	54	3 years	+		—	l. ,, ,,	,,	—	—
,,		F.	62	6 months	+		infiltration r. lower lobe	r. ,, ,,	,,	—	—
,,		M.	32	7 years	+		atelectasis r. ,, ,,	r. lower lobe	,,	electrocoag.	—
,,		F.	35	2 years	—		infiltra. r. lower lobe + bronchiect.	r. ,, ,, ,,	,,	—	—
Kernan	1935						10 cases (no particulars mentioned).				
Kramer	1935						23 adenomas (9 of which already described by Wessler-Rabin).				

bronchoscopy in a table, so far as sufficiently definite case histories were available. In 1935 Kramer[22] gave a review of no less than twenty-three adenomas, which he had observed personally at Mount Sinai Hospital, New York, where endoscopy is carried out as a matter of routine in all pulmonary cases. There is reason to expect that if bronchoscopy should be generally accepted as a routine measure in lung affections, benign bronchial tumours will be more frequently recognized.

The signs of a benign bronchial tumour are caused (1) *directly by the tumour* (hæmoptysis, cough, asthma), (2) *by secondary bronchostenosis* (atelectasis, pneumonia, bronchiectasis, etc.).

1. (*a*) The main symptom is *hæmoptysis*, which may occur during several years with shorter or longer free intervals, in varying quantities, without any other complaint. Wessler-Rabin[23] stress the sudden onset of these hæmorrhages and their equally sudden cessation, " without any subsequent period of streaking or staining of the sputum ". The tumour is usually situated in a large bronchus, and the blood, which ordinarily originates from small submucous " vascular spaces ", is coughed up before it has been able to invade the smaller bronchi. Hæmoptysis chiefly occurs in adenoma (see table); Kramer found in his series of twenty-three adenomas hæmoptysis in nineteen cases, in eleven of which it was slight, in eight moderate (over 100 c.cm.) and once severe (Hb. 42 per cent.).

(*b*) *Coughing* is rarely mentioned, except by Kramer, who deems it a constant feature in adenoma.

(*c*) *Asthmatic attacks* have been observed in several cases; here, too, Jackson's statement is true, " It is not all asthma that wheezes."

(*d*) *Dyspnœa*. In one of Wessler-Rabin's cases the dyspnœa had a pathognomonic character: " on changing to the recumbent position his dyspnœa became alarming: 'ball valve action' of a pedunculated tumour ". The diagnosis in the " unobstructive stage " is of great importance, as there are as yet no secondary pulmonary lesions and complete recovery by removal of the tumour is still possible.

2. Wessler and Rabin describe five cases in which pneumonia is said to have been the first symptom, but in their opinion this must have been the onset of atelectasis. Ashbury[24] saw a recurrent massive lung collapse. After some time

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pneumonia, pleurisy, lung abscess, or bronchiectasis will result. Several patients of Kernan[25] had been nursed for a long time in sanatoria for pulmonary tuberculosis.

Bronchoscopic examination affords the only possibility of diagnosing these tumours. *Microscopical examination* is equally important. Most of the known forms of benign tumours have occasionally been found in the bronchi: angioma, adenoma, myoma, myxoma, papilloma, fibroma, fibrolipoma, lymphangioma, lipoma, chondroma, osteoma (Jackson[26]).

The cases detected by bronchoscopy were:

Chondroma	2	cases
Fibroma	7	,,
Fibrolipoma	2	,,
Lipoma	1	,,
Papilloma	3	,,
Polypus (fibroma ?)	2	,,
Adenoma	34	,,
	51	,,

Thus adenoma would be the most frequent occurrence. However, these cases have all been described only since 1932; in the earlier literature some *post mortem* cases are described (Reisner[27]). The histological examination often presents difficulties; thus Morlock and Scott Pinchin[28] write: "We have found as also has been found by Wessler-Rabin, Jackson and Kernan, that different pathologists presented with the same section from a case, will give entirely different reports." Next to the histological picture, the benign nature of the growth is made probable by the long duration of the symptoms, the youth of the patient, the absence of metastases and the success of treatment. The benign bronchial tumours described by Morlock and Scott Pinchin were benign as to their clinical course, but histologically they were carcinomata in three cases, hæmangio-endotheliomata in two cases, and one was a dermoid.

Treatment in most of the cases consisted of removal by bronchoscopy in one or repeated sessions. Once removal was made impossible by profuse hæmorrhage (Wessler-Rabin). The result of treatment depends mainly on the stage at which treatment was carried out. Kernan and Kramer, in adenomata, also made use of radium and especially of electrocoagulation.

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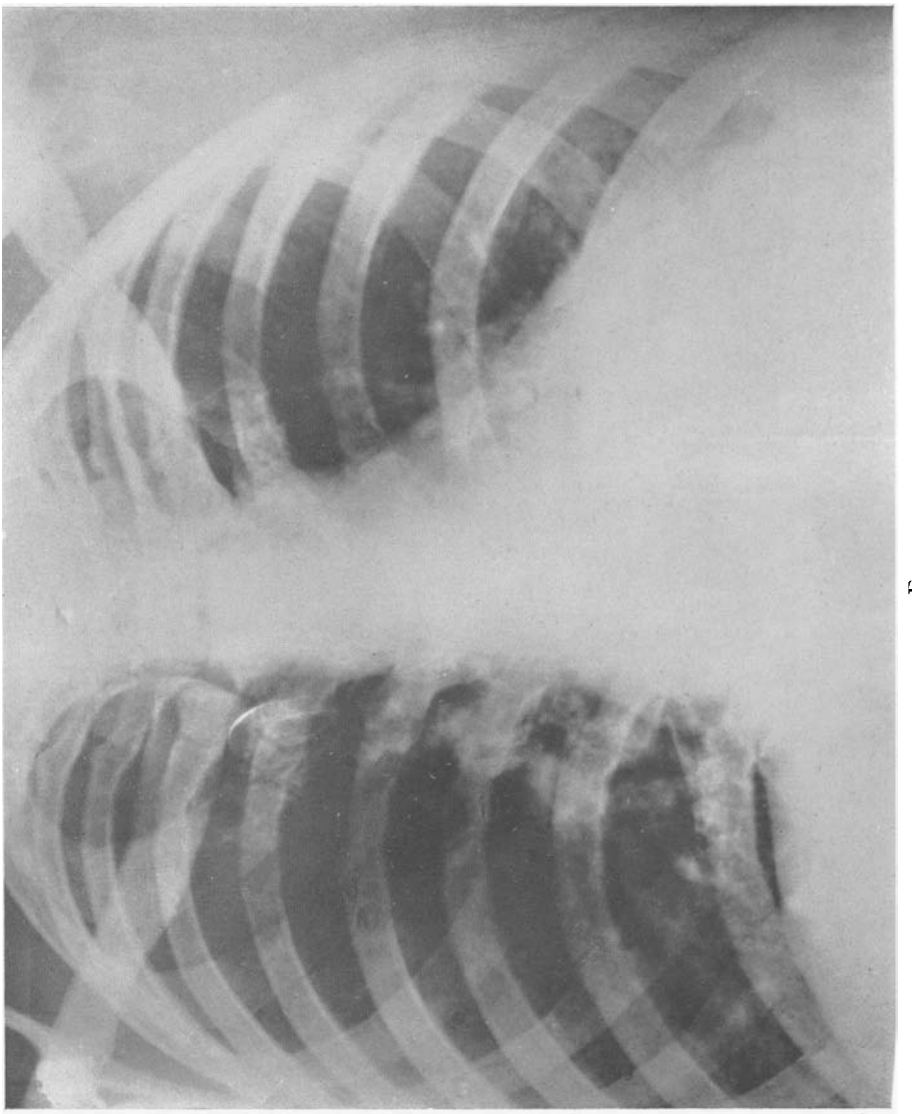


Fig. 1.
Roentgenogram (Case IV) before bronchoscopy.

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Bronchoscopy in Hæmoptysis

A separate group is formed by the so-called " tumour-like formations of the bronchi " first described by Chevalier and Ch. L. Jackson,[29] which macroscopically have the typical aspect of a tumour but histologically show inflammatory tissue.

The following case is one of *adenoma of the left main bronchus* which for a long time presented hæmoptysis as its only symptom. The microscopical diagnosis for us, too, presented difficulties, which, however, have been overcome by the kindness of Dr. Chevalier L. Jackson and Dr. Konzelman, who also examined the sections.

CASE IV.—Female, aged 39. About three years ago the patient had influenza, and had since expectorated blood. During that period she had been admitted to the Wilhelminagasthuis for three weeks, where only a diffuse bronchitis had been found. She also complained of pain under the left scapula. Consequently she had been free from trouble for half a year, after which she again had a hæmorrhage. She felt the blood rise from below upwards and then had to cough it out, the blood amounting to about one-quarter of a tea cup. Of late blood had been produced regularly, often about ten days after menstruation. For the last six months the hæmorrhage had become still more frequent, once to thrice a week.

The patient did not suffer from previous diseases, and had had no abortion ; her father died of pulmonary tuberculosis.

On examination the patient appeared to be in good general condition, no anæmia, no dyspnœa. The thorax was symmetrical in shape and respiratory movement was normal. The heart presented no abnormalities on percussion or auscultation. Lungs : on percussion the lower four fingerbreadths of the left lung were dull. Lower limits at the same level, the left one shifting much less than the right one on respiration. Auscultation revealed scattered bronchitic râles over the whole of the left lung ; the lower portion of which anteriorly and posteriorly presented diminished breath sounds with a few small moist râles. Abdomen : marked obesity ; spleen and liver not palpable. Extremities : no abnormalities. Rhinological condition : nothing abnormal, no venectasies. Rhinopharynx no abnormality. Larynx : dubious venectasies in right vallecula and glosso-epiglottica. Vocal cords normal. Sinuses : normal translucency. Urine : no albumin, no sugar. Blood pressure 160/90. Radiogram of the thorax : blurring of the left lower lung field, the diaphragm on this side is not clearly distinguished. The heart is retracted to the left (Fig. 1). Lipiodol photo of the lungs : Bronchi of left lower lobe crowded too close together. Wassermann reaction : 0·6 positive ; Sachs-Georgi : distinctly positive. On the lipiodol photo we diagnosed a partial

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collapse of the left lower lobe, caused by a bronchostenosis of a probably syphilitic nature. Bronchoscopy: larynx and trachea no abnormalities. In the left main bronchus, near the origin of the upper lobe bronchus, the lumen was markedly narrowed by an uneven, very red tumour, bleeding readily. Diagnosis: hæmangioma ? carcinoma ? Excision of piece for biopsy.

Histological Description (Dr. Konzelman).—Microscopic study of the stained preparation reveals the surface epithelium to be of the stratified squamous and transitional variety, varying in different parts of the surface. Beneath the epithelium there is a very vascular and cellular connective tissue. Numerous dilated capillaries are seen containing red blood cells and numerous similar spaces lined by flat cells which contain nothing. Whether these are blood capillary spaces, is, of course, difficult to say. It is more likely that they are blood capillaries from which the blood has disappeared in the preparation of the section. In this zone there are many bundles of proliferating fibroblasts and mononuclear leucocytes. Beneath this fibrous zone, that is still deeper, there are areas that are poorly defined in which somewhat atypical gland-like acini are encountered. The connective tissue has a definite alveolar arrangement forming spaces of varying size and shape. Within these spaces there lie from two to many nuclei surrounded by cytoplasm which is very indistinctly divided into separate cells. It is to be emphasized that these gland-like collections are by no means as distinctly outlined as the normal mucous glands of the bronchus. Yet, the individual acinus bears great resemblance to the acinus of a mucous gland. The nuclei of the cells within these structures have rather indefinite nuclear membranes, a liberal scattering of chromatin particles and an occasional small reddish or deeply stained nucleolus. Mitotic figures are not encountered. This is my conception of a benign adenoma and I consider it an excellent example of such a lesion. (Figs. 2, 3.) Diagnosis: *Benign adenoma.*

Treatment consisted of removal of the major part of the tumour with excision forceps and, provisionally, medication with potassium iodide 3 grams daily. After two months the condition has markedly improved, no more blood is expectorated, on the lung picture the left lower field is as clear as the right one. (Fig. 4.)

C. Small malignant tumours, which have not caused secondary lesions of the lung may also enter into this picture, as in the following case.

Case V.—Male, born March 21st, 1872, expectorated blood for the first time in October, 1934. First a very small quantity of red sputum, with some viscid mucus. The production of blood recurred

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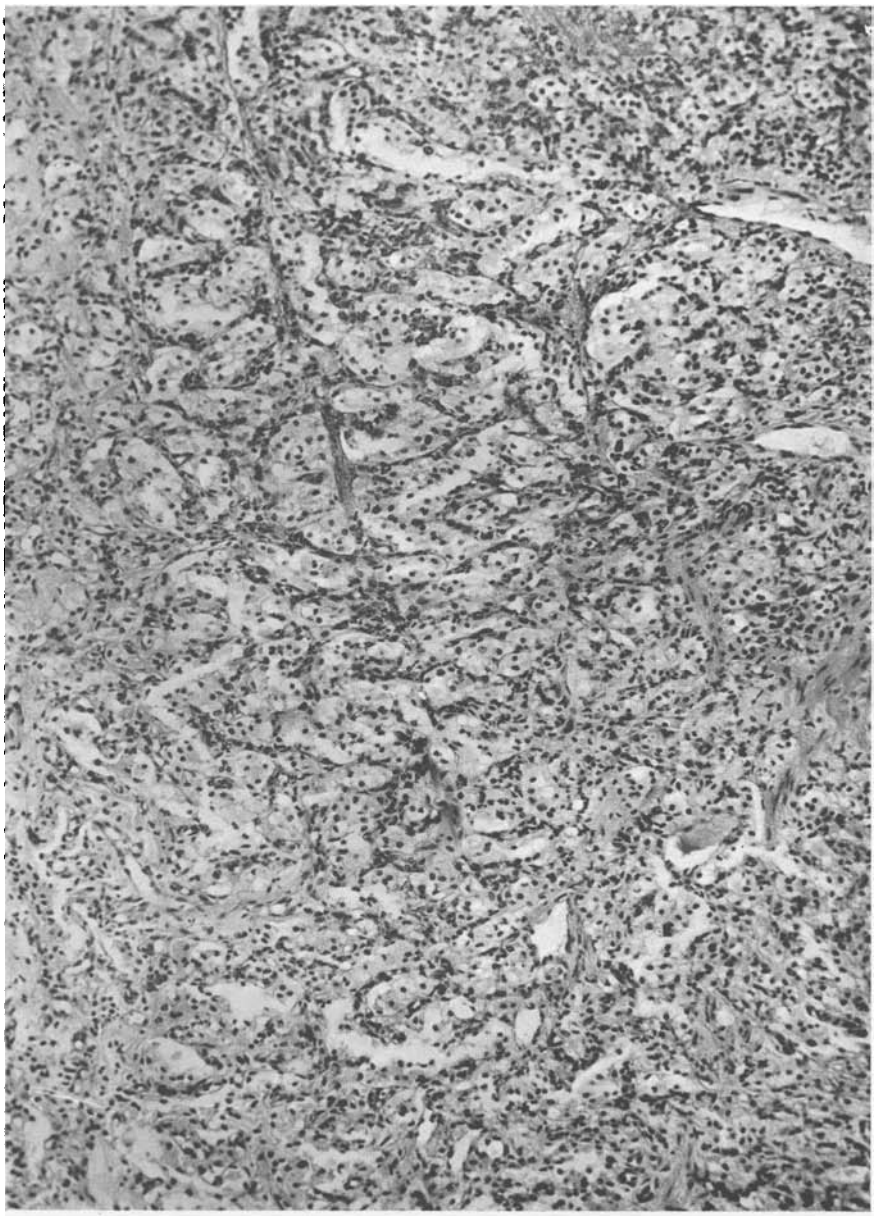


Fig. 2.
Low power photomicrograph of adenoma.

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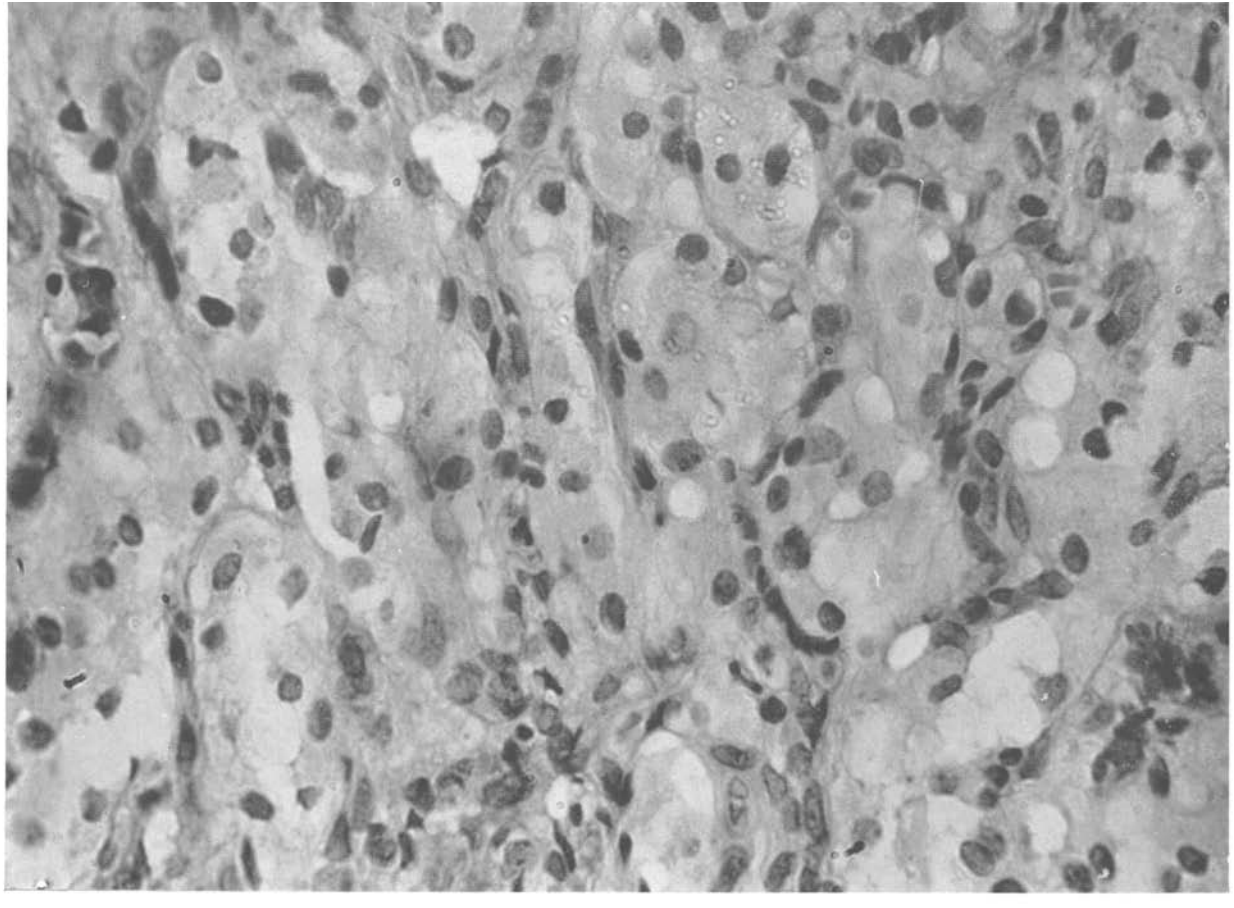


FIG. 3.
High power photomicrograph of adenoma.

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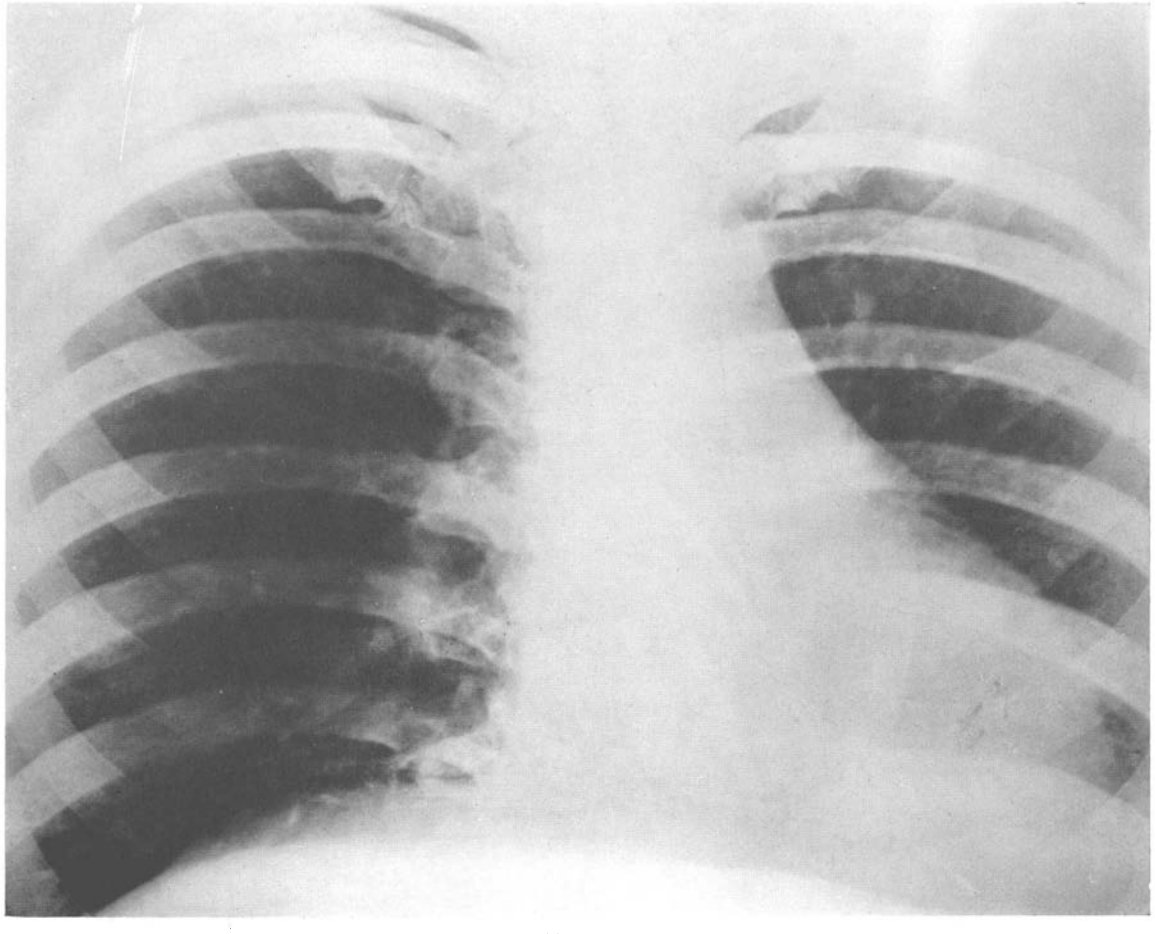


FIG. 4.
Roentgenogram (Case IV) after bronchoscopic treatment.

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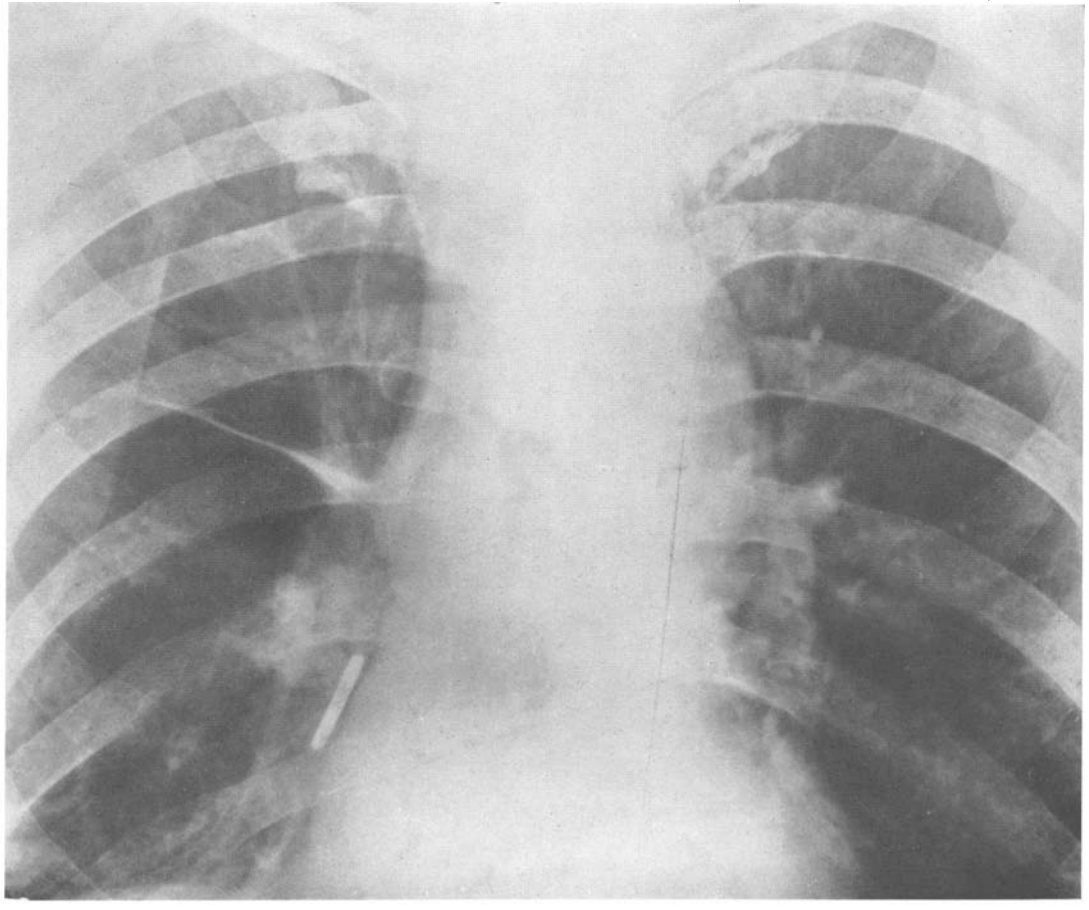


FIG. 5.
Radium tube in right lower lobe bronchus (Case V).

at least once a week, sometimes twice weekly. At times there was some coughing, which was never severe. For the rest he was free from trouble. Appetite good; the patient has become very sensitive to cold, and finds warmth beneficial; he has lost flesh. Thirty years previously he had suffered from pleurisy.

Report of internal examination of October 20th, 1934: "Some sclerosis of the blood-vessels. Blood pressure 180/100. Some scattered bronchitic sounds. No tubercle bacilli in the sputum. On the lung radiogram the trachea was displaced to the right, with high level of the diaphragm, probably as a result of previous pleurisy. No tumour was visible, but we thought the picture suspicious."

In January, 1935, the house physician sent the patient to me for bronchoscopic examination, because the patient produced regularly bloody sputum of the raspberry jelly-like type, so that he thought a pulmonary neoplasm probable, notwithstanding the negative result of internal examination. Our examination reveals:

1. On the buccal mucosa, on the level of the left upper molars, a small blue hæmangioma.
2. Venectasies on the posterior of the pharynx.
3. No abnormalities on internal examination.
4. Radiogram: no abnormalities of the lungs, only a moderate rise of the level of the right hemidiaphragm.

Bronchoscopy was carried out as an ambulatory procedure. During the application of local anæsthesia some blood stained mucus was coughed up. On account of this sign the bronchoscope was passed to the right lower lobe bronchus. At the entrance of this bronchus, at 31 cm. from the incisor teeth, a red, knobby tumour of the size of a pea was seen, which, however, left a small lumen beside it. The tumour bled readily; it reminded one of an angioma, though it also presented some analogy with a picture of bronchial carcinoma in Jackson's text-book. After admission to the hospital an excision was made for biopsy, which revealed *bronchial carcinoma*.

February 6th, 1935. A radium tube was introduced by bronchoscopy. The tube containing 25 mg. of radium element, coated with rubber, was brought down to the level of the neoplasm and put past it on its right side by means of Tucker's forceps. This succeeded easily, the tube was seen to be fixed rather firmly alongside the tumour, A strong silk thread was left in the trachea and fixed outside the mouth. The radium was left *in situ* for twenty-four hours aided by the application of morphia. X-rays showed that the tube remained in position. It was seen to the right of the heart border. (Fig. 5.) After exposure of the larynx the tube was easily removed. February 12th, 1935, no febrile reaction after the irradiation; the patient had lost no more blood, but mucous discharge was still produced.

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February 19th, 1935. Discharge of the patient. On the same day he had fever in the evening up to 40° C. The next day the house physician found a bilateral pneumonia. After continuous high temperature the patient collapsed on February 25th, 1935, and died.

This case history shows : (1) the importance of the co-operation of the house physician for the detection of the first stages of a malignant tumour of the lung ; (2) that an early diagnosis is only possible by bronchoscopy with biopsy.

To what extent in our patient the pneumonia was related to the radium treatment, remains uncertain. On the one hand pneumonia after radium treatment appears to have occurred only very rarely until now (Ormerod[30] saw one in 70 to 80 cases) ; on the other hand influenzal pneumonia occurred very frequently in February, 1935, so that it is not improbable that our patient, whose general condition was lowered, died from influenzal pneumonia.

The most favourable cases are the polypoid bronchial cancers, which can be completely removed by forceps or wire loop. Several of these cases recovered without any other treatment (Negus,[31] Benjamins[32]).

Radium treatment in the majority of cases has had only a palliative effect, but if by further development of diagnostic procedures these patients come under treatment earlier, more favourable results may be anticipated. Neoplasms which appear macroscopically as an ulcerated narrowing infiltration of the bronchial wall, in which the lumen is still patent, are the most suitable for radium treatment.

Ormerod has now treated 70 to 80 cases of bronchial cancer by radium. The majority of the patients had reached an advanced stage with infiltration of the lung tissue and hilum gland metastasis, often even metastasis elsewhere. The application of radium effected a temporary improvement in several of these patients, ranging from weeks to months, but did not impede the growth of the tumour. In a few cases in which the neoplasm was limited to the bronchial wall, recoveries (?) of 18-36 months were obtained. Whilst Ormerod, Tucker[33] and others use radium needles, which are implanted in the tumour, Negus, von Eicken,[34] Guisez[35] and others use a tube with radium, which is left in the bronchus for some hours ($\pm$24). We made use of the latter method.

von Eicken and Nelson[36] also treated the hilum glands by " spiking " them with radium needles.

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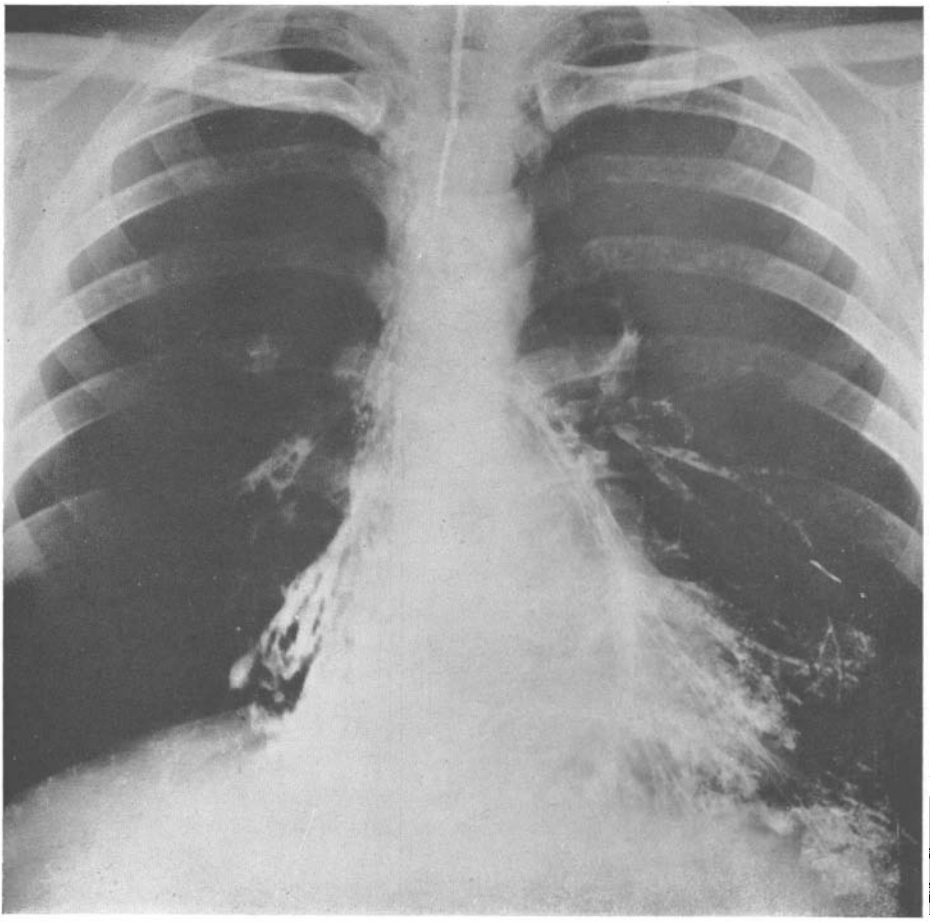


Fig. 6.
Dry bronchiectasies right lower lobe (Case VI).

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D. In *Osler's disease* the possibility of hæmoptysis must be kept in mind, although no such occurrence is known to me; an intestinal hæmorrhage, however, once occurred in one of our patients a few years ago.

E. Hæmorrhage from *pemphigus* lesions of the tracheal mucosa (Lennhof[37]) is certainly of very rare occurrence.

F. Dry bronchiectasis.

CASE VI.—Male, aged 28. For three weeks blood has been expectorated. The blood came without coughing, no epistaxis has been complained of. The patient has had a dry cough since his infancy, but no sputum. No former diseases other than diphtheria.

Physical and X-ray examination of the lungs reveals nothing particular. On the bridge of the nose and the cheeks a few small angiomas are found, but on the lips, nasal and buccal mucosa these are absent. The larynx is normal. At a repeated roentgen examination (tuberculosis dispensary) a few ring shaped shadows are seen near the right hemidiaphragm; on account of these a lipiodol photo is made, which reveals several bronchiectasies in the right lower lobe. (Fig. 6.)

Bronchoscopy: slight tracheitis in the branches of the right lower lobe bronchus with scanty purulent secretion, on removal of the latter by suction the mucous membrane is distinctly red. The other bronchi show nothing abnormal.

The diagnosis is made of " forme séche hæmoptique de la dilatation des bronches " first described by Bezançon, Weill, Azoulay and Bernard.[38] Polak Daniëls[39] in his clinical lecture " Bronchiectasies which reveal themselves merely by hæmoptysis " suggests the possibly syphilitic origin of these bronchiectasies. In the case described here the Wassermann and Sachs-Georgi reactions were negative. Before bronchography had been carried out we had considered the possibility of Osler's disease because of the small angiomas on the nose and cheeks.

Summary

Cases of hæmoptysis may occur in which clinical examination remains completely negative. In these cases bronchoscopy is necessary, not only for a correct diagnosis (venectasies, benign and malignant tumours, bronchiectasies), but also because it helps us in a proportion of cases to an efficient treatment.

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Bronchoscopy in Hæmoptysis

In dieser Arbeit lenkt Verfasser die Aufmerksamkeit auf viele Fälle von Lungenblutung, bei denen mit Bronchoskopie die Quelle der Blutung festgestellt und die entsprechende Behandlung ermöglicht wird. Die Krankengeschichten von drei Patienten mit Trachealblutungen aus Teleangiektasien der Venen werden in ihren Einzelheiten angeführt. Eine vollständige Zusammenstellung aller Fälle von gutartigen Geschwülsten, über die berichtet wurde, wird in tabellarischer Uebersicht wiedergegeben. Dabei werden die Hauptanzeichen und Symptome der gutartigen Bronchialgeschwülste hervorgehoben. Eine besondere Gruppe sogenannter tumorähnlicher Affektionen der Bronchien, die zuerst durch Chevalier Jackson beschrieben wurde, zeigt makroskopisch das typische Aussehen einer Geschwulst, aber bei histologischer Untersuchung nur chronisch entzündetes Gewebe. Ein derartiger Fall wird ausführlich beschrieben.

Ein weiterer Abschnitt behandelt die kleinen bösartigen Geschwülste, die zu keinen sekundären Läsionen der Lunge führen, ferner verschiedene andere Fälle von Lungenblutung, wie die Osler'sche Krankheit, Pemphigus der Trachea und trockene Bronchiektasien. Es ergibt sich, dass in Fällen von Lungenblutung, bei denen die klinische Untersuchung keine Befunde ergab, die Bronchoskopie nicht nur für eine genaue Diagnosestellung, sondern auch zur Ermöglichung einer erfolgreichen Behandlung gewisser Fälle durchaus nötig ist.

. . . .

Dans cet article, l'auteur signale de nombreux cas d'hémoptysie dans lesquels la bronchoscopie a permis de reconnaître la source du saignement et d'établir un traitement approprié. Il donne en détail les observations de trois malades qui souffraient d'hémorragies trachéales habituelles, dûes à de la télangiectasie veineuse. Il donne, sous forme de tableau, une liste très complète de tous les cas de tumeurs bénignes qui ont été observés et attire l'attention sur les principaux signes de tumeurs bronchiques bénignes. Chevalier Jackson a décrit le premier un groups à part de néo-formations bronchiques à apparence de tumeur, ayant l'aspect macroscopique typique d'une tumeur, mais qui, à l'examen histologique, ne sont que du tissu inflammatoire chronique. Il donne en détail un exemple de ces pseudo-tumeurs. Une autre partie de son article traite des petites tumeurs malignes ayant causé des lésions secondaires du poumon, et des cas aussi variés d'hémoptysie que la maladie d'Osler, le pemphigus de la trachée, et la dilatation bronchique sèche. Il montre que dans les cas d'hémoptysie où l'examen clinique est complètement négatif, la bronchoscopie est non seulement nécessaire pour un diagnostic correct, mais aussi pour rendre possible l'application d'un traitement efficace dans un bon nombre de cas.

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