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The Medical Congress

Verwyders van die Kroonslagare

Diffuse Pleural Mesotheliomas

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geneem word dat die middels wat die pyn verlig die sirkulasie in die kroonslagare verbeter. Dit moet ook aangeneem word dat, aangesien die nitriete gladde spiere laat ontspan (insluitende spiere van die slagaarstelsel), hulle (die nitriete) hartkramp verlig deur spasme van die kroonslagare op te hef. Al hierdie oorwegings is waarskynlik korrek, maar nie een van die aannames is bewys nie, aangesien geen direkte waarneming gemaak is van die kroonslagare gedurende 'n aanval, met spesiale verwysing tot die uitwerking van nitriete nie.

By miokardiale infarksie ontwikkel pyn in sy ergste vorm as gevolg van hipoksie van die miokardium. Die pyn is weerstandig vir verwyders van die kroonslagare en is moeilik om te verlig, selfs deur die gebruik van sulke pynstillende middels soos morfien.

Die middels wat gebruik word vir verwyding van die kroonslagare is betreklik non-spesifiek. Die nitriete laat alle gladde spiere ontspan, maar die arteriole is meer vatbaar vir hierdie uitwerking. Dit mag wel wees dat hulle slegs 'n betreklike spesifieke uitwerking het in gevalle van abnormale vatbaarheid, soos byvoorbeeld by spasme van die kroonslagare, waar klein dosisse verligting bring sonder dat daar 'n algemene gestelsuitwerking is. Dit veronderstel dat die middels weinig waarde mag hê vir die verbetering van kroonslagaar-sirkulasie as daar geen spasme is nie. 'n Middel wat 'n vinnige uitwerking het, is aangewese; en as die pyn eers verdwyn, skyn geen verdere medisyne nodig te wees nie. Dit mag dus gebeur dat, by die gebruik van vatverwyders wat 'n verlengde uitwerking het, die pyn reeds al deur rus verlig word voordat die farmakologiese uitwerking van die middel kan intree; ook kan die uitwerking van die middel dan nog lank voortduur nadat daar nie meer behoefte daarvoor is nie. Vir die verligting van 'n aanval van hartkramppyn is die soort middel wat 'n vinnige uitwerking het, aangewese. Daar is baie middels wat 'n stadige uitwerking het, (wat gebruik word om aanvalle te voorkom of om 'n langdurige uitwerking teweeg te bring), wat slagare wat in spasme is gou laat ontspan en die pyn dus verlig feitlik voordat dit ontwikkel. Daar is egter geen afdoende antwoord op hierdie probleme nie — in die literatuur is daar baie teensprekende verklarings oor hierdie saak. Verskeie ondersoeke op hierdie gebied is òf swak beplan òf onvoldoende gekontroleer.

Die nitriete het 'n kragtige uitwerking om die aanval van hartkramp te verlig. Gliserieltrinitraat tabletvorm) is gewoonlik die beste. Amieinitriet meer amptelik (B.P.) nie, maar word tog nog aar wanneer 'n baie vinnige uitwerking ver'ang Gliserieltrinitraat wat ingesluk word (nitrogl is waardeloos, aangesien die middel in die vernietig word Die uitwerking word van krag middel onder die tong opgelos word: dit neem 'n langer om opgemerk te kan word, maar dit duur e langer as wat die geval is met nitriete wat inge Die middel het 'n vaste dosisvorm en word d geneesheer en nie deur die pasiënt nie, bepaal. Dit veiliger om te gebruik as die geneesheer nie teenw is nie. Daar is verskillende middels in hierdie groep wat 'n langdurige uitwerking het, maar hulle nie baie algemeen gebruik nie.

'n Groot groep middels wat teenhouers is monoamien oksidase (iproniasied, isokarboksasied, sien, nialamied) het nou verskyn. Hulle het 'n king op die luim van die pasiënte — die sogen psigiese energieverwekkers. Sommige hiervan mag waarde wees by die behandeling van hartkramp, hulle aangeleentheid behoort versigtig benader te Aminofillien en teobromien word 'n geruime tyd gebruik vir hartkramp, maar, soos dit ook die g met so baie ander middels, het 'n vergelyking m gebruik van plasebo's geen spesiale voordeel aa nie.

Alhoewel daar dus 'n hele aantal middels is wat uitwerking het op hartkramp, is die nitriete die middels waarop ons kan reken dat hulle die kroons verwyd en pyn verlig. Dit is nie bewys dat die ander middels wat hierdie uitwerking sou hê, wel tief of betroubaar is nie. Die nitriete het egter voorbehoedende uitwerking nie, miskien omrede v ontwikkeling van toleransie. Die groot behoefte op gebied is eintlik aan 'n middel wat aan 'n farmakologiese groep behoort, en waarteen toleran ontwikkel nie.

1. Modell, W. (1960-1961): *Drugs of Choice*. St C. V. Mosby.

DIFFUSE PLEURAL MESOTHELIOMAS IN SOUTH AFRICA

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PAUL MARCHAND, *Department of Thoracic Surgery, University of the Witwatersrand and Johannesburg Gene Hospital;* and
J. C. WAGNER, *Senior Medical Officer, Pathology Division, Pneumoconiosis Research Unit, South African Co for Scientific and Industrial Research, Johannesburg*

In another paper[1] we reported on 33 cases of diffuse pleural mesothelioma, histologically diagnosed at the Pneumoconiosis Research Unit of the South African Council for Scientific and Industrial Research, Johannesburg. Thirty of the cases were investigated clinically by ourselves. Since then a further 8 cases have been proved, 4 of which were under our care. This paper supplements our other communication with a description of the clinical and radiological findings in the 34 cases which we selves investigated.

COMPARATIVE RARITY OF DIAGNOSIS

The histological diagnosis of diffuse pleural mesoth is a contentious subject. Doubt has been thrown o existence as an entity by Robertson[2] and Willis[3] p malignant mesothelial tumours were describe

...perer and Rabin[4] and Stout and Murray.[5] Recently ... concerning these tumours have appeared from ... countries; these include those of Tobiassen,[6] ... and Bovo,[7] Godwin[8] and McCaughey.[9] The diag... our cases has been confirmed by South African ...gists and well-known authorities from Britain and USA including Dible,[10] Gough,[11] Steiner,[12] Stewart,[13] ...wski.[14]

...s pleural mesothelioma is generally considered a ... Daub and Jones[15] reported 3 cases among ... consecutive admissions to the Henry Ford Hospi... The largest series that we have been able to find in ...erature is that of Choptal *et al.*[16] who described 22 ...seen over a period of many years. In contrast, our ...group has been diagnosed mainly during the last 4 ... It must be stressed that we have only included cases ...ere the nature of the tumour has been confirmed ...gically, either on biopsy or necropsy material. A ...ber of cases showing radiological and clinical features ... have been excluded. Three of these cases had ...ually abnormal cells in the pleural fluid.

ASSOCIATION WITH ASBESTOS

... frequency of mesotheliomas is possibly significant in ...parent association with areas where asbestos is ...ed or milled. Evidence in support of this has already ... presented[3] and includes:

... The finding of asbestos bodies in the lungs of 12 ... of the 41 patients with mesotheliomas, even though ...e majority of the earlier cases, before the association ... suspected, the biopsies usually consisted of tissue from ...rietal pleura only. Asbestos bodies have been found ... of 11 biopsies in which lung parenchyma was in... Evidence of asbestosis has been observed in 6 out ...e 7 cases in which the lungs have been examined at ...opsy.

... The fact that 19 of these patients worked with ...stos, either as miners, millers or industrial workers.

... The fact that all except 2 of the other 22 cases were ...er born, or spent a significant period of their lives, in ...asbestos area of the north-western Cape Province.

... *...os Bodies in the Sputum*

... ...rther, one of us (C.A.S.), working on the clinical ...othesis that exposure to asbestos causes an increased ...al reaction in patients suffering from tuberculosis, ...mitted numerous sputa from the West End Hospital, ...berley, to the Pneumoconiosis Research Unit for ex... ...nation. Asbestos bodies and fibres were found in the ... of 115 patients who had no definite mining expo... Included in these were specimens from people work... in a dry-cleaning works and abattoirs in the North ...n Cape in places 100 miles away from the nearest ...s.

... The presence of asbestos bodies and fibres in the ...tum is naturally only indicative of exposure to asbes... dust and is not evidence of asbestosis unless there is ...cal and radiological support. However, from these ...ings it would appear that people possibly not asso... with asbestos production or utilization, have been ...sed to the hazard.

... *...ries in the North West Cape*

... The area of the asbestos deposit in the North West Cape, the most extensive in the world, extends from 20 miles south of the Orange River north to the Bechuanaland border, covering approximately 8,000 square miles. The deposits are mainly in the slopes of the Asbestos Mountains, a range extending more or less longitudinally between 22·30° and 23°E (Fig. 1).

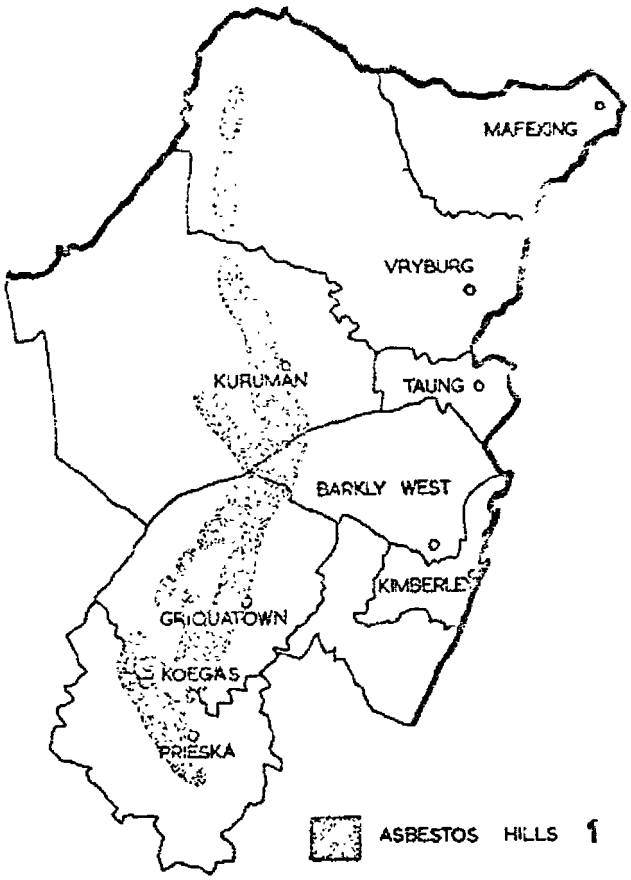


Fig. 1. Map showing asbestos deposits in the Cape Province.

Mining and Milling

The type of asbestos mined throughout this area is crocidolite, better known as Cape blue asbestos. Crocidolite is the fibrous form of riebeckite. All stages of transformation, from massive riebeckite rock through lamellar riebeckite to asbestiform crocidolite, occur in this region. Magnetite is frequently associated with the crocidolite (Vermaas[17]). Mining of asbestos first began in the Prieska district in 1893 and gradually spread northward. In 1908, production had begun in the Kuruman district. This northward trend has continued and, in about 1950, mining started at Pom-Pom, near the Bechuanaland border. (Fig. 2 shows, graphically, the asbestos production from 1910 - 1958.) Initially the ore was quarried in numerous small open-cast workings. This was followed gradually by a type of shallow mining; inclined shafting became more common after 1930.

Since the 1939 - 1945 war, the demand for crocidolite has increased enormously. Since deeper and richer deposits have been found, vertical shafts are being sunk. However, the mines with large shallow deposits continue to use the inclined shaft and tunnel, and quarrying is still used by

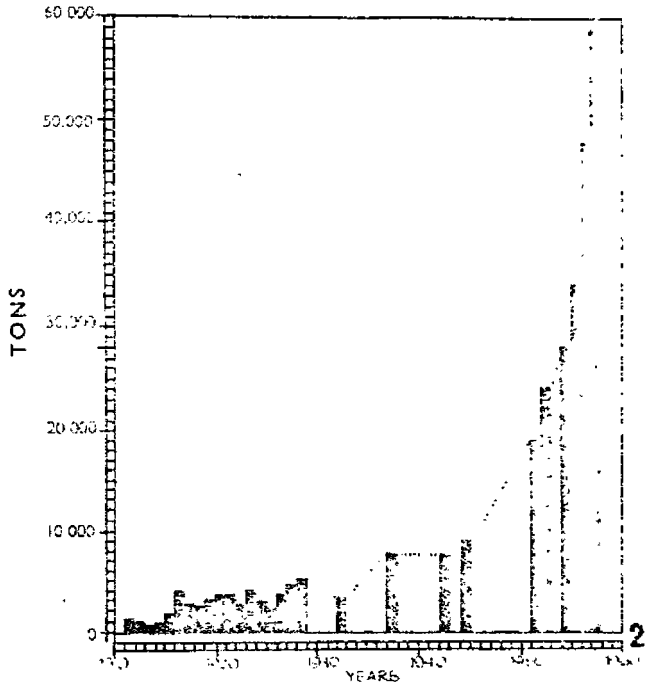


Fig. 2. Production of crocidolite by asbestos mines in the North West Cape in tons per year (1910-1958).

the few remaining smaller producers. With the building of more mills, hand cobbing* has diminished. In 1915 the first crushing mill was established at Koegas in the south. This was followed by a large mill at Kuruman (operated between 1926 and 1931) where it was situated within 300 yards of the main street, close to which hand cobbing was also done for a few years (1927 - 1930). This was followed by a mill at Prieska in 1930, which was completely rebuilt in 1957. Griquatown had a small mill in 1928. The practice today is for one mill to serve several mines in the immediate vicinity.

In the early days the manager and labourers lived within a few yards of their place of work, and even today the non-White personnel prefer to live as close as possible to the mills and the children play on the dumps from the mines and mills.

The industrial use of asbestos has increased during the last 30 years. In 1930 Hall stated that there were 4 firms in the Union manufacturing asbestos products (in Cape Town, Durban, Johannesburg and Meyerton) which used a total of 900 tons of fibre annually. In 1952, 17,000 tons of fibre were used in local industry. Carroll-Porczynshi[15] lists 7 firms dealing with asbestos in Cape Town and 44 in Johannesburg. Asbestos cement and an asbestos clay compound are used extensively for insulating boilers in power stations, industries and railway locomotives. Three of our patients were employed in this way. Another patient was employed manufacturing fire-proof clothing. Cases of asbestosis have been observed in a variety of industries on the Witwatersrand.

Asbestos and Carcinoma

The association of asbestos with carcinoma of the lung was first described by Lynch and Smith in 1935.[19] By 195., according to Doll,[2] a total of 61 cases r reported Merewether analysed the cases th occurred in Britain betwe... 1924 and 1954. He fou in a total number of 344 cases, carcinoma of th was present in 55 (16%), the figure for males be (20 of males) and for females 14 (10% of femal cases of mesothelioma of the pleura associated w bestosis have been described. One was mentio Doll[2] 2 by Cartier,[5] and 3 by Van der Schoot.[7] A 33 cases with possible asbestos exposure were de by Wagner *et al*.[3]

In our series of cases the latent period, betwee apparent exposure to asbestos dust and the initia toms of the disease, was between 20 and 60 In some cases the patients had left the North Wes and, in others, the exposure had been of such a tra nature that it was rapidly forgotten. Evidence of sure was only obtained after long and detailed quest According to Day[4] and Stewart,[13] a long latent p between initial exposure and the development of ev of malignancy is one of the features of occup tumours. The reason for the tumours having been in the vicinity of the Cape asbestos fields and not region of the Transvaal asbestos mines may be due time factor, assuming that the association is sign since the industry was established earlier in the Cap in the Transvaal, where large-scale mining began co tively recently. The type of asbestos mined is a possible factor which would apply to the chrysotile of the Eastern Transvaal. However, the amosite found in the Lydenburg district is similar to the crocidolite and the crocidolite mined around the P burg district is identical.

CLINICAL PICTURE OF MESOTHELIOMA

Clinical Presentation

The majority of patients are over the age of 40 usually present with symptoms suggestive of a pr tuberculous effusion. Pain varies from a feeli heavi ss to acute pleuritic pain. From the beginn after a variable time there may be increasing dysp on exertion. Cough is not a predominant symptom i group. A few patients present as cases of acute respir infection with a productive cough Th... is accomp by a pleural effusion. In some c... es there is an i between the respiratory infection and the finding o pleural effusion. The course of the disease, while mately similar, usually takes one of two forms — eit pleural effusion continues to increase, requiring fre paracentesis, or it undergoes a temporary quiescent p while the pleural space becomes obliterated by ti Towards the end the patient is seriously disabled th pleuritic pain and dyspnoea. Terminally ascite develop due either to peritoneal metastases or to ca failure.

Clinically the disease may be described as hav stages. Initially the presentation is one of pleuris bronchitis and the usual diagnosis is a virus or py pneumonitis. At this stage antibiotics are usually su ful in alleviating the symptoms. The second stage is c

* Freeing the fibre from the ore by striking the lumps of rock with a hammer.

effusion with pleural thickening, it is then that the patient is usually admitted to hospital for investigation. Tuberculosis, malignancy, asbestosis and other causes of pleural disease may be considered. The final stage is one of obvious thoracic malignancy.

Sex, Race, Habitat and Occupation

The 34 cases consisted of 24 males and 10 females (Table I). All the men who had lived all their lives in the vicinity of the asbestos mines were the only patients under 40 at the time of diagnosis. Four of them had been miners. They were all in their thirties, the youngest being a miner aged 30. On the other hand, 7 patients were over 60, 5 being men and 2 women. The oldest was a man of 68. Six of the patients had lived for many years in the asbestos areas and 3 of the 5 men had worked for long periods in close contact with asbestos. One woman died at the age of 39. As far as we have been able to ascertain, she had never been in contact with asbestos in her occupation as a nursing sister, and had never lived in the North West Cape. She is the only patient of the 34 who apparently had no contact whatever with asbestos.

TABLE I
AGE AND RACE DISTRIBUTION OF THE 34 CASES OF MESOTHELIOMA DESCRIBED

Sex	Age 30 – 39	40 – 49	50 – 59	Over 60	Total
Male (14)	2	6	3	3	20
Female (6)	0	1	3	2	
Male (5)	2	2	0	1	8
Female (3)	0	2	1	0	
Male (5)	2	2	0	1	6
Female (1)	0	0	1	0	
	6	13	8	7	34

The remaining 21 patients, 8 women and 13 men, were aged between 40 and 60. The 8 women had either been born in the asbestos district, or had moved there in early childhood. At the time of diagnosis, 3 of these women were in the Transvaal and had never, or only occasionally, visited the North West Cape after leaving school. Three women had been engaged in the cobbing of asbestos in their homes. The non-European women mostly lived close to mines in houses where cobbing operations produced much dust, even when they themselves had done no such work. The European women had been to school near mills and had played on the dumps.

The 13 men aged between 40 and 60 comprised 7 whose work was connected with the mining, milling and transport of asbestos, 2 who were born and bred in the district but had not been engaged in the industry (they had often witnessed cobbing operations in native huts and had played on dumps and in mine shafts on farms), and 4 who worked with asbestos in distant industrial towns. Of these industrial cases, 2 were boiler makers who had lagged locomotive boilers. Another of these men had spent the war years manufacturing asbestos protective devices for fighter aircraft fires, and the fourth had worked as a boiler attendant in a Cape factory, whose supply of asbestos was obtained from the Cape asbestos fields. It is interesting to note that in 1 family both the father and a daughter died pathologically proved mesotheliomas. In 2 other cases a miner had radiological evidence of asbestosis.

Physical Signs

In the early stages auscultatory evidence of pleurisy, bronchitis, or consolidation are usual. As the disease progresses, respiratory excursions diminish until eventually a frozen chest results, with flattening of the infraclavicular region, 'roof-tiling' of the ribs and immobility of the chest wall. The chest is then stony-dull to percussion and air entry is grossly impaired.

During this late stage of the disease, evidence of secondary spread may appear. Eight cases in our series showed obvious clinical signs of peritoneal involvement before death. The peritoneum is usually infiltrated by direct spread through the diaphragm. The liver may be enlarged and nodular, due to perihepatic involvement. Localized masses due to involvement of the omentum or paraaortic lymph nodes may be felt. In these cases ascites is common. Involvement of the lymph glands of the neck has been clinically obvious in 2 cases. Implantation of the tumour in a biopsy scar is not frequent, but it complicated 4 thoracotomies and 1 thoracoscopy in our series. Haematogenous spread is unusual and only 2 cases have eventually developed distant metastases. These were predominantly subcutaneous but, in 1 instance, numerous small deposits appeared in the tongue.

Pleural effusions have always developed. Fluid collections of 5 - 6 pints have occurred, but often the pleural space is largely obliterated and only small effusions can collect. On tapping these effusions, considerable resistance is encountered due to the thickness of the diseased tissue (up to 2 cm.) which has to be traversed. Even with the point inside the cavity, the needle is often so tightly gripped that manipulations are restricted. Usually the fluid is straw-coloured, but blood-staining occurs and may be heavy.

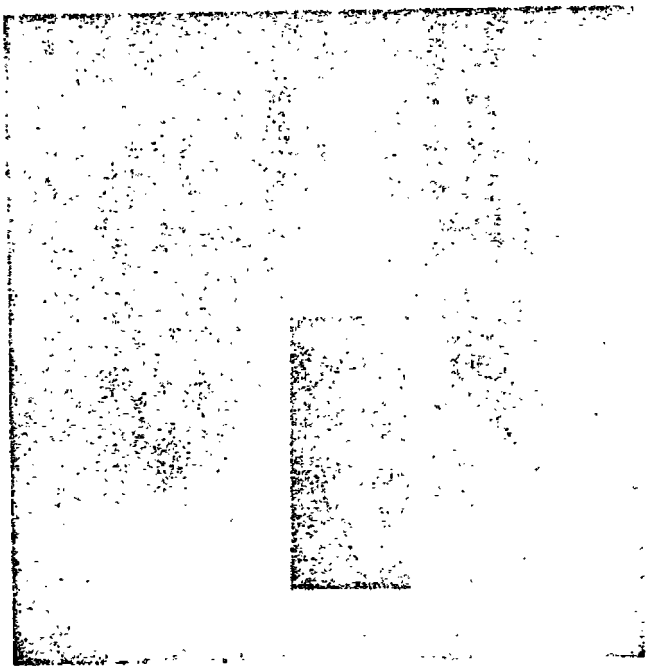


Fig. 3. Diffuse pulmonary asbestosis, particulary well shown in lower lung zones.

SPECIAL INVESTIGATIONS

Radiological Features

The X-ray findings roughly parallel the clinical progress. The initial radiographs may show few changes. In about a third of the cases, radiological signs of asbestosis were present. Asbestosis, in individuals with a proved and adequate record of exposure, is characterized by evidence of diffuse interstitial fibrosis of varying degree. In a well-established case the appearance will conform to the well-known classical pattern of pulmonary asbestosis. This may be either a generalized homogenous clouding of the lung fields, particularly the lower zones, or a fine striate and fibrillary change in the lung structure, with progressive loss of pulmonary radiolucency (Fig. 3).

In the majority of cases of asbestosis, old-standing pleuritic changes are also seen. Thus a combination of both pleural and pulmonary parenchymal pathology frequently occurs. The pleural changes take the form of bilateral pleural thickening, pleural adhesions and rather characteristic dense calcific plaques (Frost *et al.*[5]). While pleural thickening *per se* in asbestosis is non-specific in character, sclerotic pleurisy, with plaque formation, constitutes a readily recognizable and rather typical entity (Fig. 4). The pattern of calcification patently differs from

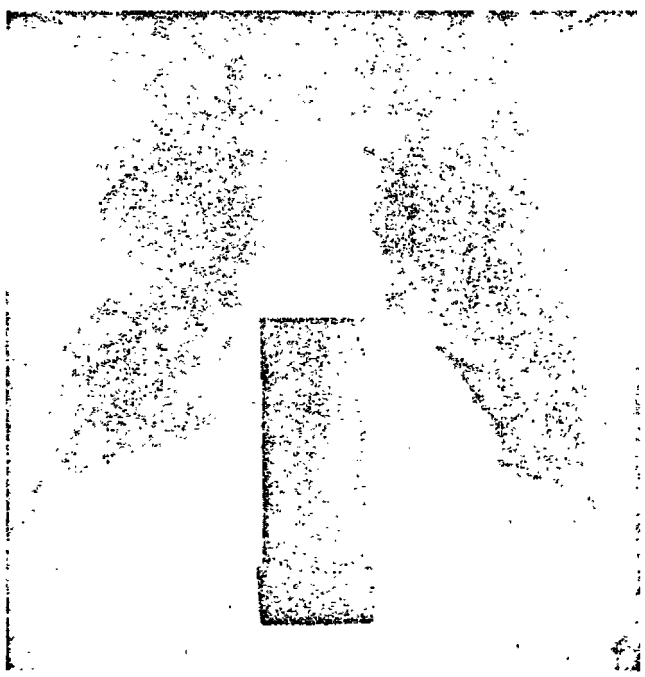


Fig. 4. Extensive bilateral pleural plaque formation. Typical involvement of paramediastinal and diaphragmatic pleura is also demonstrated.

pleural calcification due to other causes. This pattern was recognized frequently during the recent investigations of miners and millers. Even the chance finding of such typical calcification is now accepted as being highly significant, so that previous exposure to asbestos may be predicted with reasonable confidence. The dense plaques, however, do simulate those described in workers exposed to other silicate dusts such as tremolite talc, calcimine and mica (Smith[6]). The plaques may be few or [illegible]. They are usually bilateral, and di[illegible]d in [illegible] patches, chiefly in the middle and lowe[illegible] zones. Seen on they appear as linear plaques in the periphery [illegible] the diaphragmatic contours, and adjacent to the [illegible] stinum. A lateral view of the thor[illegible]x will also very show extensive linear plaque formation, involving diaphragm and the anterior aspect directly behind sternum. Such pleural calcification was encountered several of our cases of mesothelioma (Hurwitz[7]).

However, in the majority of cases, no evidence of ceding pleural or pulmonary asbestosis was found. cases, on investigation, invariably showed unilateral involvement in the form of diffuse thickening or effu The appearance may be massive from the beginning usually a localized scalloping, or solitary mass in periphery, raises the first suspicion of pleural neop As the disease advances, more extensive nodular 'lumpy' pleural thickening develops (Fig. 5). This p



Fig. 5. Nodular pleural thickening, seen clearly on t right.

of unilateral pleural pathology is a highly significant f ing in a patient from the asbestos are[illegible], but of cours similar appearance may be produced by secondary m nant involvement of the pleura. Very often a large pl effusion will obliterate the picture and, only after rem of the fluid, will it become apparent that the pleu grossly thickened and nodular. Both the parietal visceral pleura are affected and an induced pneumoth particularly, will clearly demonstrate the rather chara istic pattern of marginal massive nodularity along parietal chest wall, over the surface of the collapsed and at the base (Fig. 6).



...6. Induced pneumothorax revealing gross malignant ...olvement of pleura. A considerable quantity of fluid ...ill present in the right pleural cavity.

...the later stages, a considerable part of the pleural ...ity may be obliterated and a comparatively small space ... remain. Here fluid may collect under tension and the ...g may be further compressed, in spite of being encased ... a thick tough covering of malignant tissue. As the medi...nal pleura thickens, and the regional lymph glands be...me infiltrated, widening of the mediastinum is seen radio...gically. Eventually the pericardium is involved by direct ...tension, and the resultant pericardial effusion causes ...gressive enlargement of the cardiac silhouette and ...change in its configuration. Extrapleural extension can ...also occur; then radiological evidence of rib involvement ...may be present.

Nagt and Murray[5] remark upon the right-sided pre...derance of the disease. In the series of 24 cases re...rted by Choptal *et al.*,[16] 19 were right-sided. Our cases ...ent an identical distribution, since 27 of the 34 cases ... right-sided lesions. In no case was the mesothelioma... process initially bilateral, although the X-rays of 10 ... the patients showed bilateral changes due to asbestosis.

...oscopy and Thoracotomy

The information obtained from thoracoscopy was dis...pointing. The view is always limited in cases of meso...elioma because the cannula cannot be freely manipu...ted. When blood has extravasated into the effusion, the ...ls of the cavity are covered with fibrinous deposits and ... architectural details are visible. The chief objection to ... technique, as a diagnostic measure, is that the choice ... area for biopsy is restricted, and it is impossible to ...in a representative specimen. Thoracoscopy was the ... diagnostic procedure in the early stages and, although sufficient material for microscopic examination was usually obtained, we feel that a great deal of information was mi...

With early cases, where the pleura is thin and the effusion clear, it is often possible to visualize the discrete pleural nodules overlying the still elastic lung. The nodules are then usually cherry-coloured and either smoothly-rounded or warty in appearance. Later the discrete nodules coalesce and the underlying lung is obscured. The growth is then usually seen as a grey opaque membrane, with localized excrescences of variable size and similar appearance projecting into the pleural space. At this stage the outstanding feature is the thickness and density of the pleural growth and the complete immobility of the incarcerated lung beneath.

As far as possible, it is now our policy to obtain a specimen of lung by open operation. With 4 early cases, attempts were made to decorticate lungs which were completely encased by thick, apparently fibrous, coverings. In 3 cases the findings were similar. The parietal pleura was 1 - 2 cm. thick and very hard. The lungs were collapsed and bound down by thickened visceral pleura, identical in appearance with the parietal pleura. The pleural spaces were occupied by straw-coloured or blood-stained fluid. Attempts to strip the 'peel' off the chest wall could only be made through the extrapleural plane, but even then the intercostal spaces were constantly entered and no vestige of normal parietal pleura could be found. Calcified plaques within the diseased tissue were frequently encountered, particularly over the diaphragm and inter-

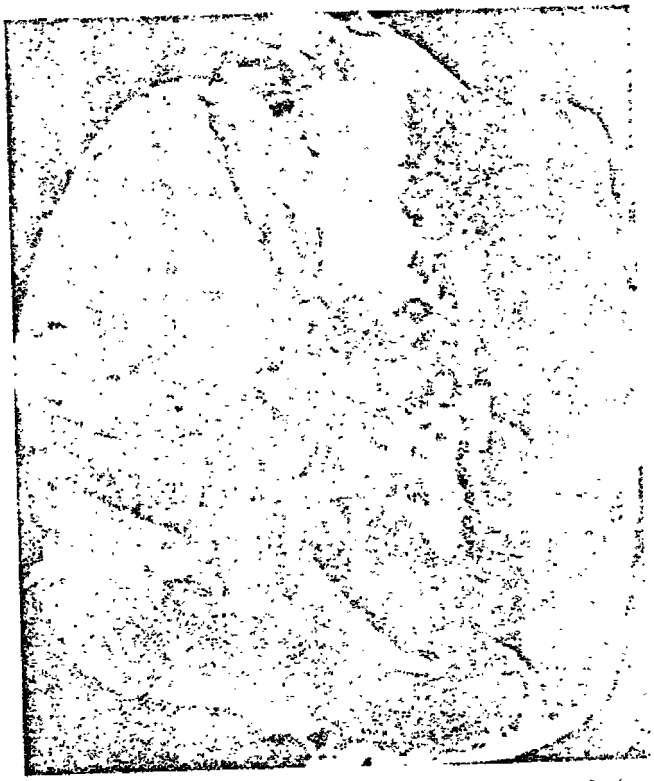


Fig. 7. Macroscopic specimen of mesothelioma of the pleura.

lobar fissures. It was never possible to define planes between the visceral pleura and the pathological tissue, so that separation was possible only by entering lung tissue. False planes could be developed through compressed peripheral lung. When the deep aspects of the peel were inspected, fine blackened fragments of lung were seen adhering to them. The tumours dipped into the lung substance along the interlobular septa and, for this reason, stripping along these false planes was halted every few millimetres. Inevitably, the procedure has to be abandoned, leaving a collapsed, tattered and leaking lung.

AUTOPSY FINDINGS

At autopsy the whole thoracic cavity may be occupied by a large gelatinous tumour, which displaces the mediastinum, and markedly compresses the lung (Fig. 7). In other cases the tumour may be dense and cartilaginous. In these advanced cases no remnant of a pleural space may remain. The tumour infiltrates adjacent structures, so that the pericardium, heart, chest wall, diaphragm and liver may form one solid mass. In 1 case the tumour extended into the posterior peritoneum, encasing a kidney. The mediastinal, cervical and para-aortic lymph glands may be involved and appear as large discrete tumours. The lung is always compressed, with marked lymphatic spread in some terminal cases. Because the neoplasm extends along the interlobar fissures, the lobes appear as 2 or 3 small deeply pigmented areas within a huge pinkish-white mass.

PROGNOSIS AND TREATMENT

Our first impressions, based upon the apparently fibrous nature of the tumour, was that it was slow-growing, but we found this to be far from true. According to Choptal *et al.*[16] the average duration of life from the time of onset of symptoms is 18 months. Hochberg's review[29] of 43 cases showed that 37 (86%) died within the first year. Of the 34 patients discussed here, 28 have died, 17 (61%) within a year of the development of symptoms. Seven (25%) died during the second year, 2 (7%) during the third year, and all 28 were dead within 48 months, which is the longest survival time among our patients.

It has already been shown that operative removal of the growth is impossible and some form of chemo- or radio-active therapy would seem to provide the only hope of effective treatment. Results have been disappointing. Two patients were given repeated intrapleural injections of nitrogen mustard. Both men died within 6 months. Four patients, with seemingly localized areas of disease, were given deep-X-ray therapy. All were dead within a year. Six patients have had radio-active gold instillations. Four died within 13 months of the commencement of their injections and 2 are alive, but their treatment was recent. There seems little to be gained by subjecting patients to the additional discomforts of present forms of therapy we still advise radio-active gold intrapleurally in comparatively early case, where the lung retains elasticity.

SUMMARY

The clinical and radiological findings of 34 patients suffering from diffuse pleural mesotheliomas are described. Thirty-three of these patients gave a history of exposure to crocidolite asbestos mined in the North West Cape. However, even when lung tissue was available, histological evidence of asbestosis was not obtained in every case. Asbestos bodies were found in the lung tissue of 30 of the cases.

The findings of this and our other papers are sufficiently striking to justify further epidemiological and laboratory investigations. These investigations will attempt to determine the causative and correlative factors, including the possible relationship with asbestos or other dusts, especially in the regions from which the cases have most frequently been reported.

We wish to thank the many medical practitioners in the Griqualand West District, and the thoracic surgeons, physicians, radiologists and pathologists from elsewhere in the Union whose assistance has made this investigation possible.

We thank the Director of the Pneumoconiosis Bureau for permission to reproduce the X-ray plates shown in Figs. 3 and 4.

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PASSING EVENTS : IN DIE VERBYGAAN

South African Institute for Medical Research, Johannesburg, Staff Scientific Meeting. The next meeting will be held on Monday 23 January at 5.10 p.m. in the Institute Lecture Theatre. Dr. L. Webster, of the Pneumoconiosis Research Unit, will speak on 'Pneumoconiosis problems'.

* * *

Southern Transvaal Branch (M.A.S.A.). An important general meeting of this Branch will be held at Medical House, 5 Esselen Street, Hospital Hill, Johannesburg, on Third January 1961 at 8.15 p.m. Reports will be presented by President on the recent developments in connection with (*a*) medical insurance companies, (*b*) medical aid societies (*c*) the Medical Services Plan. The Domicile Clause in Sec. 24 of the Medical, Dental and Pharmacy Act will also be before the meeting for full discussion. Members of the Branch are urgently requested to attend this important [illegible]