

sharp pain in the left chest. A radiograph showed a small left spontaneous pneumothorax. The right side had re-expanded. She was admitted to hospital, where a left thoracotomy was performed. This showed the visceral pleura to be somewhat injected; there were a number of fine bullae over the surface and a few larger scattered bullae. The lung felt very firm and nodular, and a biopsy of lung showed pathological appearances typical of sarcoidosis. Pleurodesis was performed with camphor. There has been no recurrence of pneumothorax.

Case 4

A man aged 34 was admitted to hospital in January, 1954, for investigation of a painless swelling in the right groin. There was a history of shortness of breath over the previous six years. His medical history and family history were non-contributory. Examination revealed bilaterally enlarged lymphatic glands in occipital, supraclavicular, axillary, epitrochlear, and inguinal regions. The liver and spleen were not enlarged. The E.S.R. was 25 mm. at 1 hour (Westergren), and a tuberculin test was negative to 1/100 O.T. Laryngeal swabs were negative for tubercle bacilli. Other investigations, including blood count and plasma proteins, were normal or non-contributory. Chest radiographs showed massive hilar adenopathy, a large paratracheal mass in the right superior mediastinum, and diffuse reticular shadows throughout the lungs, most pronounced in the upper zones. Radiographs of the bones of the hands showed no abnormality. Biopsy of a gland showed appearances typical of sarcoidosis. The patient was discharged from hospital and kept under observation.

In March he complained of shortness of breath of some weeks' duration. A left spontaneous pneumothorax was found on physical examination and confirmed radiographically. Hospital admission was delayed for six weeks at the patient's request, and repeated x-ray pictures taken subsequently when he was an out-patient showed that the lung had failed to expand. He was then admitted with pyrexia and a pleural rub at the left base. Laryngoscopy, performed because of a history of hoarseness, revealed a left recurrent nerve palsy. The E.S.R. was 50 mm. at 1 hour (Westergren). Chlorotetracycline was prescribed and the lung gradually re-expanded over a total period of two months. Apart from shortness of breath, he has remained symptomatically well.

Discussion

During the last decade it has become obvious that sarcoidosis is a much commoner disease than was previously thought. It is certain also that many cases of pulmonary sarcoidosis were diagnosed in the past as pulmonary tuberculosis with a sputum negative for tubercle bacilli. The scarcity of reports of spontaneous pneumothorax complicating pulmonary sarcoidosis is difficult to explain. A number of such pneumothoraces have no doubt been regarded as complications of pulmonary tuberculosis, but this cannot be the only explanation. Either it is really uncommon or its occurrence has been taken for granted by many clinicians and hence not described. The occurrence of two patients with this complication among the 52 cases of pulmonary sarcoidosis reported by Riley (1950) possibly suggests the latter hypothesis. Until we searched the literature we had no idea that it had been reported only five times previously.

The underlying pathological changes in pulmonary sarcoidosis, both in its infiltrative stage and in its chronic fibrotic stage, are likely to be accompanied by areas of emphysema, and, apart from the absence of caseation and cavitation, are not unlike those of pulmonary tuberculosis. It is probable that when spontaneous pneumothorax occurs in sarcoidosis it is due to the rupture of an emphysematous bulla. This may happen in tuberculosis also, but the frequent presence of caseous lesions and cavities provides additional causes for spontaneous pneumothorax and an explanation of its commoner occurrence in tuberculosis.

Summary

Four cases of spontaneous pneumothorax complicating pulmonary sarcoidosis are reported. In two patients it was bilateral. Although this complication has been reported previously in only five patients, reasons are given for thinking that it may not be rare.

We are indebted to Dr. E. D. H. Cowen for permission to include the records of his patient, Case 4.

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HERPES ZOSTER, CHICKEN-POX, AND CANCER IN GENERAL PRACTICE

BY

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The belief is prevalent that an association exists between herpes zoster and chicken-pox, and recently it has been suggested that there is a relationship between cancer and herpes. Provided accurate and continuous note-taking is undertaken any such relationship should be capable of being investigated by the family doctor.

In my practice of some 2,400 patients I have kept accurate and complete records of all ailments since July 5, 1948. The practice is two-thirds suburban and one-third rural. The following information is based upon an analysis of the records of these illnesses in question during the seven-year period from July 5, 1948, to July 4, 1955.

Herpes Zoster

It is possible that all patients with herpes zoster consult their family doctor. This, of course, is due to the discomfort and sometimes severe pain that it causes, associated with the blemishing of the skin. During the seven-year period of this review I had 81 cases of herpes zoster. Table I shows that, while the frequency varies slightly between the sexes in different age groups, the overall picture is that the sexes are equally involved. In both sexes the older age groups are more often affected.

Table II shows the location of the disease; the sex is included for possible variations. In both sexes the thoracic wall is the area most frequently involved. The head and

TABLE I.—Age Incidence of Herpes Zoster

Age	Male	Female	Total	Per 1,000 at Risk	
				Male	Female
0-4 years ..	0	0	0	0	0
5-14 " ..	2	2	4	19.0	14.8
15-44 " ..	10	6	16	19.0	12.0
45-64 " ..	20	17	37	71.0	45.8
65+ " ..	9	15	24	62.0	81.0
Total ..	41	40	81	34.1	31.0

TABLE II.—Location of Herpes Zoster

	Male	Female	Total
Head and neck	11	6	17
Upper and lower extremities ..	2	10	12
Thoracic wall	20	20	40
Abdominal wall	7	4	11
Not known	1	0	1
Total	41	40	81

neck are next in importance, and in this area the male takes precedence, while the extremities are more often involved in the female.

Table III shows the habitat of these 81 patients. It will be seen that this disease affects the rural patients just as often as it does the town dwellers.

Some observers have noted the occurrence of epidemics of herpes. Table IV clearly displays the endemic nature of the disease, and while variations do occur between years the

TABLE III.—Habitat of Patients with Herpes Zoster

	Male	Female	Total
Town	26	29	55
Country	15	11	26
Total	41	40	81

TABLE IV.—Seasonal Incidence of Herpes Zoster

	1948	1949	1950	1951	1952	1953	1954	1955	Total
January	—	3	2	0	0	0	0	1	6
February	—	0	1	1	3	3	1	1	14
March	—	0	1	1	1	2	1	1	7
April	—	0	0	0	0	1	0	0	1
May	—	2	1	2	2	3	0	0	10
June	—	0	3	1	1	1	1	1	8
July	0	1	1	0	1	0	4	—	7
August	0	0	1	3	2	1	0	—	7
September	0	2	0	0	2	0	0	—	4
October	2	0	0	1	2	0	1	—	6
November	3	0	0	2	1	1	0	—	7
December	0	2	0	0	0	1	—	—	4
Total	5	10	10	11	15	13	9	8	81

differences are not large. Where differences are present it is not because of any individual month having an undue proportion but rather because of fewer months when no cases were seen. Over the seven-year period the month of February has accumulated the most cases, but the numbers are not large enough for this to be considered a defined seasonal variation.

Infectivity of Herpes Zoster.—The infectivity of herpes zoster must be very low. This conclusion is derived from the fact that in no household were two cases affected concurrently or at an interval which would suggest one affecting the other. My records show that three households had more than one occupant with the infection during the seven years of the survey, but in each case the occurrence was separated by a period far beyond what would be regarded as an incubation limit. In one of these households two sisters who invariably slept together each had the infection. They were aged 15 and 16 years when they were attacked, and one was first seen for this on May 6, 1949, and the other on June 27, 1952. In the second household a husband and wife were affected. The husband was first seen for it on October 20, 1952, and the wife on August 12, 1953. The third household involved an elderly couple who lived alone in a one-roomed house. The wife, who was recovering from an attack of severe biliary colic, developed herpes on July 9, 1950, but the husband did not have herpes until May 13, 1952. In the case of the wife the herpes zoster was in the area of distribution of the right lower intercostal nerves. In five female and in two male cases the victims lived alone and had very little contact with the outside world. In all the other cases there was ample opportunity to spread the infection either from the proximity of a husband and wife occupying the same bed or from other normal household contacts.

Chicken-pox

Unlike herpes zoster, it is possible that not every case of chicken-pox is seen by the family doctor. A mother with several children may seek advice about the first one or two cases, but when she finds that no treatment is prescribed she may elect to treat succeeding cases herself. During the seven years 147 cases of chicken-pox have been recorded, and I should estimate that not more than another 5% escaped my observation.

The slight variations between males and females (Table V) are of doubtful significance. The important point displayed is that chicken-pox is a disease of infancy and early childhood, with the adult only rarely involved. Table VI shows the habitat of the sufferers. It is seen that the rural dweller was not so readily infected as the town dweller in comparison with herpes zoster, but the numbers are too small to be of any significance.

Seasonal Distribution.—Table VII shows that, while each year has had a complement of cases, there are wide variations, and explosive outbreaks of considerable severity occur in some years. This was seen in 1952. This epidemic

TABLE V.—Age Incidence of Chicken-pox

Age	Male	Female	Total	Per 1,000 at Risk	
				Male	Female
0-4 years ..	23	29	52	217	325
5-14	53	37	90	376	272
15-44	2	1	3	3.8	1.9
45-64	1	0	1	3.5	0
65+	1	0	1	6.8	0
Total	80	67	147	66.6	51.9

TABLE VI.—Habitat of Patients with Chicken-pox

	Male	Female	Total
Town	60	47	107
Country	20	20	40
Total	80	67	147

TABLE VII.—Seasonal Incidence of Chicken-pox

	1948	1949	1950	1951	1952	1953	1954	1955	Total
January	—	1	1	1	22	3	0	0	28
February	—	1	0	1	6	2	0	3	13
March	—	0	1	0	14	0	1	0	16
April	—	0	0	0	7	1	4	0	12
May	—	0	1	0	0	0	5	0	6
June	—	0	1	0	0	0	2	0	3
July	2	9	5	0	0	3	7	—	26
August	0	7	0	0	0	0	1	—	8
September	0	0	2	1	0	0	0	—	3
October	1	1	2	4	0	0	1	—	9
November	0	2	1	9	3	0	0	—	15
December	0	0	0	6	2	0	0	—	8
Total	3	21	14	22	54	9	21	3	147

started in September, 1951, and reached its height in January, 1952. A secondary flare-up occurred in the March, and it was May before it had completely settled down. Minor outbreaks occurred in July–August, 1949, and in the spring and early summer of 1954. January and July seem to be the months in which the condition is most prevalent.

Infectivity.—Chicken-pox is highly infectious: in this series there were 33 families two or more members of which developed the disease simultaneously or within the usually recognized incubation period. In a few families, however, there is no record of some member having had the infection. For reasons already given, this information is not reliable, and to confirm the absence of the infection would mean jogging the memory of the patient or parent—an untrustworthy procedure. In at least two families, however, the infection was present at intervals far beyond the accepted incubation period. Thus in the case of a brother and sister there was an interval of 10 months, and only two years separated their ages. In the second case the sister had the infection when she was 13 months old, while the brother, who was 3 years older, did not get it until two years later. It is possible, therefore, for individual members of a family to escape the infection at a particular period.

Relationship of Herpes Zoster and Chicken-pox

For many years it has been assumed that there is a close relationship between herpes zoster and chicken-pox. It was first suggested by Bokai, a Budapest physician, in 1888, on

clinical grounds. Serological tests by Amies (1933) confirmed this, and their similarity under the electron microscope appears to give final proof. A number of writers have described epidemics of chicken-pox which appeared to follow contact with a case of herpes. Pickles (1939), a shrewd observer of infectious diseases, is sure that two of his epidemics of chicken-pox followed such a contact, and he states that the epidemic peaks of the two diseases "roughly correspond." Cases in which herpes zoster follows contact with chicken-pox are thought to be very rare.

In my series the relationship of the two diseases is obscure. The totals of the two diseases occurring each year during the seven-year period (Tables IV and VII) show no real relationship between the peak period of herpes zoster and that of chicken-pox except in the year 1952, when each disease showed the highest number of recorded cases. The greatest number of herpes zoster cases occurred during the six months when no chicken-pox was seen, and in the month when chicken-pox was most rife there were no cases of herpes.

It is possible for the two diseases to attack the same patient simultaneously. This occurred in an elderly man. The rash of herpes was first seen on July 23, 1954; on July 28 the widespread rash of chicken-pox also appeared. This has been observed by other writers, but it is not a frequent occurrence. My notes show the case of a child who had chicken-pox on February 15, 1952, along with her brother. On December 15, 1952, she developed a one-sided rash on the inner thigh and labia majora. My assistant diagnosed herpes zoster, but when I saw the patient two days later I was rather doubtful, and I regret not having had this diagnosis confirmed. It is, however, retrospective examination of notes that reveals the lost opportunities and acts as a guide for further observation. Otherwise, my notes show no record of a patient who definitely had chicken-pox and, at a much later date, herpes zoster. The reverse sequence also applies.

In three households chicken-pox and herpes zoster were seen to affect different members of the same family during the seven-year period. In the first family a boy is recorded as having had herpes zoster on July 20, 1949. This was followed by two sisters with chicken-pox—one starting on July 30 and the other on July 31. At this period, however, a small epidemic of chicken-pox was present in the community, and the infection of these three occurred midway through it. In the second family the father developed herpes zoster on November 19, 1952, and although one of his two children was susceptible at the time she did not get chicken-pox until May, 1954. The girl was 7 years of age when she had chicken-pox, and the boy was only 2½ years at the time of infection. In the third family, of three girls, one had chicken-pox on January 19, 1953, the second on February 26, and the third child—the eldest—developed herpes zoster on March 5.

Malignant Disease

There is never any doubt about patients with cancer reporting to their family doctor. Sooner or later they all arrive. The pity is that some are rather late. During the seven-year period of this investigation 54 cases of some form of malignant disease have been encountered. The age and sex incidence and the rates per thousand at risk are given in Table VIII. It will be seen that the females suffered slightly more often from this killing disease than

TABLE VIII.—Age Incidence of Malignant Disease

Age When Diagnosed	Male	Female	Total	Per 1,000 at Risk	
				Male	Female
0-4 years ..	0	0	0	0	0
5-14 ..	0	0	0	0	0
15-44 ..	3	6	9	5.7	11.9
45-64 ..	10	12	22	35.6	32.3
65+ ..	10	13	23	69.0	70.3
Total ..	23	31	54	19.1	24.0

TABLE IX.—Habitat of Patients with Cancer

	Male	Female	Total
Town	15	22	37
Country	8	9	17
Total	23	31	54

the males and that those involved were predominantly elderly.

It is of interest to note that in 15 of these 54 cases of cancer the patients (13 females and 2 males) were alive at the end of seven years. This discrepancy is to a large extent due to the survival rate of cancer of the breast. Eight of the female survivors had cancer in this site. Table IX shows the habitat of the patients. The proportions in town and country correspond very closely with the proportions of suburban and rural patients in the practice, and suggests that cancer has occurred with equal frequency in the town and rural dweller.

Relationship of Cancer and Herpes Zoster

Wyburn-Mason (1955) investigated the frequency with which malignant change arises in tissues affected by herpes zoster. He found that 26 cases out of a total of 2,925 skin cancers and 2,580 breast cancers had had a previous attack of herpes varying in time from a few months to many years. Twenty-three other cases had a doubtful relationship. He states that no figures are known of the frequency of herpes in any community and that patients must be specifically asked about it, otherwise they will not volunteer a previous history of the disease. My figures of 81 cases in seven years correspond very closely with those of Pickles (1939), who saw 77 in the same length of time. It is possible that his practice is similar in size. I have not questioned the patients for the purposes of this paper, since I think it is an unreliable method of investigation. I have confined myself to information recorded in my notes. Therefore the period of time before the diagnosis of malignancy was made varies from one to seven years.

In this series 2 of the 54 cases of malignancy are recorded as having had herpes zoster. One man was first diagnosed as having had a lung cancer in 1951, and he developed herpes of an intercostal nerve root two years later, in 1953. The second case was that of a man in whom rectal carcinoma was diagnosed on February 12, 1953, and who showed the typical lesion of herpes zoster along an intercostal nerve root on February 19. None of the remaining 79 cases of herpes zoster followed up from one to seven years have so far shown any evidence of developing a malignant growth.

Discussion

While the virus of herpes zoster and that of chicken-pox may closely resemble each other, the clinical manifestations of the two diseases differ widely. Herpes zoster is a painful ailment, particularly in the elderly. The rash is confined to the distribution of one or more posterior nerve roots and the infectivity is very low. It is a disease of the elderly. Chicken-pox, on the contrary, is not painful, has a generalized rash over the whole body, and is highly infectious. It is a disease of the very young. The two diseases may affect the one individual simultaneously.

In one case of this series herpes zoster preceded an attack of chicken-pox on other members of the household, but, as already stated, an epidemic of chicken-pox was already in existence. The reverse sequence was also seen in one family. It is to be noted, also, that in the family where the father developed herpes zoster his daughter of susceptible age did not get chicken-pox until two years later, when her younger brother was also affected.

Both diseases occur with considerable frequency and some overlapping is inevitable. Indeed, it would be strange if it were not so. The final judgment must await a more prolonged period of note-taking, but the study of this series suggests that there is no epidemiological evidence of the virological relationship between these diseases.

Malignancy and herpes zoster affect the same age groups. Herpes occurs with greater frequency than does cancer.

The series of 54 cases of malignancy and 81 of herpes zoster do not show any tendency for malignancy to develop following herpes. In the two cases where herpes and cancer occurred in the same person the herpes followed the diagnosis of cancer and suggests that the herpes is caused by irritation of the posterior nerve root either by the original cancer or by concealed secondaries in the spinal column. It could also, of course, be unrelated.

Conclusion

A study of 81 cases of herpes zoster and 147 cases of chicken-pox occurring over a period of seven years failed to show any epidemiological association between the two diseases. While neither showed substantial sex or urban/rural variations, the diseases differed widely in age groups involved, in susceptibility, and in the annual and seasonal variations observed over this time.

The study of 54 cases of cancer and 81 cases of herpes zoster over a similar period does not suggest that a herpes zoster infection has any carcinogenic properties. In fact, in the only two cases in which both diseases occurred the cancer antedated the herpes.

My thanks are due to my assistant, Dr. T. C. Morton, for help in getting this information out and to my secretary, Mrs. Potts, for care with my notes.

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PYLORIC OBSTRUCTION DUE TO PANCREATIC HETEROTOPIA IN A CHILD

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Pyloric obstruction in childhood is rarely encountered except within the first few months of life. The following is an account of a child aged 5 years who died and in whom pyloric obstruction due to pancreatic heterotopia was discovered at necropsy.

Case Report

A girl aged 5 years 2 months was admitted to hospital in December, 1954. There was a history of recurrent attacks of vomiting for approximately one month, and at the onset of her illness she had suffered from dysuria and frequency of micturition. Since infancy the child had been undernourished and caused her parents considerable anxiety on account of frequent refusal to take food. This was regarded as part of a functional disturbance—for during a previous prolonged hospital admission for atopic dermatitis she was emotionally very upset and suffered from mutism.

On admission the patient was underweight (28 lb. 2 oz.—12.75 kg.) and was slightly dehydrated. She appeared extremely nervous and had badly bitten fingernails. There was an extensive monilia infection of the mouth; the urine contained numerous pus cells, and *E. coli* was cultured from the urine. There was a mild normochromic anaemia.

The thrush and urinary infection responded rapidly to treatment and the general condition improved. As the child was emotionally disturbed it was decided to discharge her home. However, before this could be done she developed a relapse of the urinary infection and the vomiting recurred. In the early hours of January 10, 1955, the child vomited copiously, collapsed, and died quite suddenly.

Post-mortem Examination.—The external appearances were those of a poorly nourished female child. There was bilateral pulmonary oedema. The air passages were clear. The stomach was dilated and there was an obvious tumour at the pyloroduodenal junction. On opening the stomach it was found that the pyloric canal would only admit a probe, 3 mm. in diameter. The pyloric tumour, which almost completely encircled the pyloric canal, measured 1 cm. in thickness and 1.6 cm. in its long axis. It was a hard tumour, and the cut surface resembled that of a leiomyoma. The other organs appeared normal to the naked eye. Microscopy showed the tumour to consist of pancreatic glandular tissue,

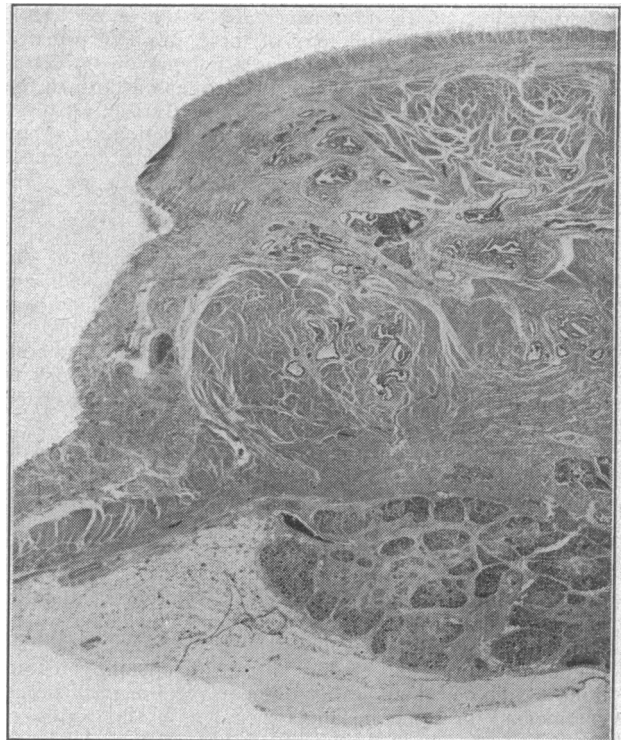


FIG. 1.—Section of the pyloric tumour which illustrates the marked muscle hyperplasia. ($\times 10$)

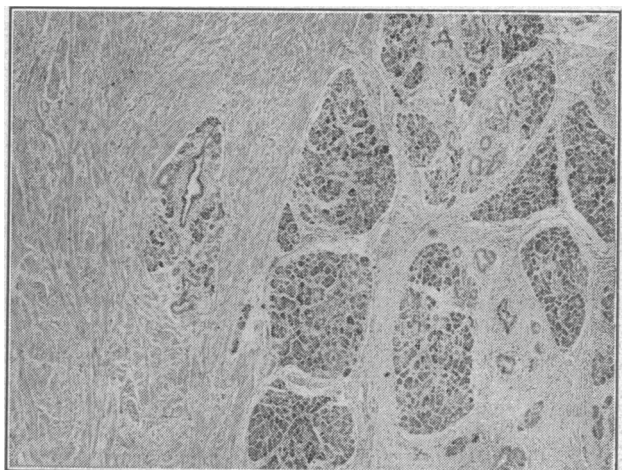


FIG. 2.—Higher-power view of the pyloric tumour showing pancreatic tissue supported by a muscle stroma. ($\times 50$)