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REPORT OF A CASE OF HODGKIN'S DISEASE COMPLICATED BY PREGNANCY.

By ASA B. DAVIS, M.D., Attending Surgeon.

Hodgkin's disease is of such comparatively unusual occurrence that a case complicated by a contemporary pregnancy was deemed worthy of the report which is herewith presented.

The patient's history is as follows. Mrs. A. B. age 32, para V, (C.N. 17762), born in Ireland. The family history was negative and the patient herself had never been ill in bed until the present condition developed. The woman was married for the first time nine years previously, and her husband died a year later of a " neglected cold ". She had one child dating back to this marriage, eight years of age and supposedly healthy. There was no history of any miscarriages. She married her second husband four and a half years previously, by whom she had two children, both healthy, four and two years of age. All these labors were spontaneous and easy and the children large. About five years before admission she had a miscarriage at about six weeks for which she was curetted. The patient's habits had been good and there was no history of syphilis. She menstruated regularly and her last period occurred on October 9, 1909. In December of that year she began to complain of a burning pain in the right side of the abdomen, which disappeared under treatment for the time being. It returned during the month of February, and continued to the time of admission. This pain was described as dull and aching, extending across the abdomen and into both shoulders, being accompanied at the same time by a feeling of constriction. The pain was always more severe on lying down, so that the patient was compelled to sleep in a Morris chair, which however seemed to give relief.

About seven weeks before admission to the hospital the patient went to sleep in this chair feeling rather weak but otherwise well and having been able to walk up to this time without any difficulty. On the following morning the patient was unable to get up out of her chair and was never able to walk since that time. At first she could move her thighs and legs but this ability gradually disappeared. The lower extremities were alone affected in this paralysis, the onset of which was unaccompanied by

chill, fever or other constitutional disturbance, aside from an indefinite parasthesia. Since the patient's admission to the hospital she believed that she was able to feel her feet move and also whenever she "felt life", she said that the legs "were jerked." Involuntary defecation and urination were also present. The patient developed a bed sore before admission but did not know how long it had been present because she felt no pain whatever from it. The paralysis seems to have always been of the flaccid order.

The appetite was poor and the patient occasionally vomited. She had had a slight cough with yellowish or greenish expectoration but no blood. The woman believed that she had lost weight. There was an occasional swelling of the legs and profuse night-sweats.

Two years previously, during her last labor, the patient noticed a sudden swelling in the right side of the neck, but was certain that there was nothing there previously. This was unaccompanied by pain and had not grown in size. It troubled her only occasionally when she had a cold in the head or when she lay upon that side.

On admission to the Hospital the chief complaints in this case may be summarized as, paralysis of the legs, pain in the right side, involuntary defecation and urination and a general weakness. The patient was also eight months pregnant. A careful physical examination made at the time of admission on May 22, 1910, disclosed the following features. The pupils were equal and reacted rather sluggishly to both light and accommodation. The conjunctivæ were slightly icteric. The sight was good, but a lateral nystagmus of a slight degree was present when the eyes were directed to the left and upwards. The ears and nose were apparently normal and the tongue was coated with irregular patches particularly along the edges. There was no deviation and no tremor. The neck did not show any rigidity, but behind the angle of the jaw and extending beneath the right sterno-mastoid muscle there was a small soft lobulated elastic tumor. This was freely movable and did not seem to be attached to the muscles or the skin. There was no infiltration of the surrounding cellular tissues. Behind the right sterno-mastoid muscle the posterior chain of glands was somewhat enlarged but not tender.

The thorax was normal in size and contour and the chest expansion good. The lungs were normal. The heart action was rapid and irregular and the area of cardiac dullness extended from the right border of the sternum to a point about three and a half inches to the left of the mid-sternal line. There was present a short, faint systolic murmur, loudest to the left of the sternum in the sixth intercostal space. This was probably hæmic in character and otherwise the heart sounds were regular and normal in quality. The abdomen was enlarged by an eight-months' pregnancy with the fetus in R. O. A. position. The fetal heart sounds were not heard, but the movements were evident. There did not seem to be any enlargement of the liver or spleen. A vaginal examination disclosed

Fig. 1.—Showing interstitial hyaline fibrous tissue at the periphery of a lymph node from the primary cervical tumor.

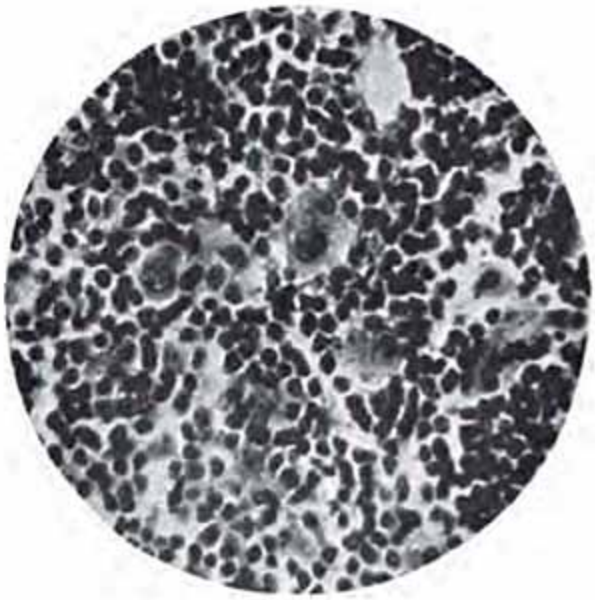

Fig. 2.—A hyperplastic lymph follicle from a lymph node removed from the primary cervical tumor, showing giant cells in the center.

PLATE VI.

a large and excoriated vulva. The cervix was high, anterior and soft, with the external os admitting one finger. The vagina was large and relaxed and no fetal parts had descended into the pelvis.

A diffuse acne was distributed over the back of the thorax and a bed-sore as large as the palm of the hand was present over the sacrum. Incontinence of both bladder and rectum was present. The legs were both very œdematous, and a flaccid paralysis was present extending from the hips to the feet. There was an absolute anæsthesia of the skin of both legs including pressure, heat, cold and pain. This area extended upward over the abdomen to a distinctly marked horizontal line 29 cm. above the symphysis and over the back to about the level of the iliac crests. The rest of the body was normal as regards sensation. The knee jerks and the knee clonus were absent. The Babinsky and plantar reflexes were doubtful. Occasionally upon pricking the skin of the legs or feet, indefinite muscular twitchings occurred and with each twitch pain in the right side of the abdomen was complained of.

A characteristic of the symptoms depending on nerve disturbances was the line of sharp demarcation.

On May 27, 1910, the patient delivered herself in bed without any previous evidences of oncoming labor. She had a severe chill lasting five minutes followed by a temperature of 105° F. and the child was born without further warning.

The child was of the male sex, apparently of about eight months gestation and died on May 27 of inanition as the result of its premature condition.

On the day after labor the woman's temperature rose to 103.6° F. and continued with slight remissions at about this level, making several excursions to 105°. The pulse varied from 100 to 150. About the ninetieth day after labor the temperature began to run along at a somewhat lower level (101° to 102°). A few days before death, which occurred on the one hundred and nineteenth day after labor, the temperature remained mostly subnormal, with the pulse around 100.

The urine examination made at frequent intervals during the puerperium, usually disclosed an alkaline reaction, rather low specific gravity, traces of albumin, low urea excretion, many pus cells and considerable detritus.

The blood examinations were as follows:

	May 21, 1910	May 24, 1910	June 3, 1910
Red cells	3,880,000		3,900,000
Hemoglobin	78 per cent		77 per cent
Color Index	1		0.9
Leucocytes	11,600	12,000	11,800
Small lymphocytes	10	5	8.4
Large lymphocytes	1.5	4.5	10.2
Polymorpho. neutrophiles	88	89	79.8
Eosinophiles		1.5	0.2

In studying the case with the idea of possibly relieving the paraplegia, a laminectomy and exposure of the spinal canal at this point was considered, for it was inferred that the pressure symptoms were produced by a metastatic growth secondary to the primary lesion in the neck, which was considered to be either lymphosarcoma, tubercular adenitis, or the glandular enlargement associated with Hodgkin's disease. In order to determine the nature of the lesion the following laboratory tests were applied: The Crile hemolysis test for lymphosarcoma proved negative. Von Pirquet's test was then employed twice and proved negative each time. Examination of the sputum was negative as regards the finding of tubercle bacilli. Finally a Wassermann reaction was done, likewise with negative results.

It was then decided to remove a small portion of the enlarged gland under cocaine for purposes of diagnosis. Sections of this tissue were reported by Dr. J. E. Welch, the pathologist to the Hospital, to be made up of lymphatic structure surrounded by normal fibrous capsules. The lymph-follicles in the central part of the section showed hyperplasia of the lymphoid cells. Towards the periphery of the gland there was present an extensive development of very dense hyaline interstitial fibrous tissue. This was especially marked beneath the capsule and less so as the centre of the node was approached. The section apparently disclosed a simple inflammatory condition of the lymph node. A confirmatory examination was made from another portion of the tumor a few days later, which showed the same changes as those previously noted. The lymph cells did not show any tendency to penetrate the capsule, but instead of this a fibrous condition was found. This second specimen showed, however, in addition, scattered through the hyperplastic lymph-follicles a few giant cells with large oval nuclei centrally placed and rather small cell bodies (Plate VI Fig. 2). The association of these peculiar giant cells in the hyperplastic lymphoid follicles with a tendency to form interstitial fibrous tissues at the periphery of the gland, led to the assumption that the process was an inflammatory one and of the nature of a granuloma. A diagnosis of Hodgkin's Disease was therefore made.

The autopsy on this patient was made on September 24, 1910, by Dr. J. E. Welch. The findings were as follows:

BODY. That of a woman in middle life, 165 cm. long, poorly nourished and developed. The skin and visible mucous membranes were very pale. On the right side of the neck was a mass 10 x 3 cm., with its long axis running parallel to the median plane of the body. This mass was lobulated, slightly movable against the deeper structures, but firmly attached to the skin. At the lower part of the mass which extended from the level of the tip of the ear to a point just above the supraclavicular notch, was a small healed scar. The supraclavicular lymph nodes were palpable, but the axillary, epitrochlear and inguinal nodes could not be felt. The lower limbs were flexed at the knees at an angle of about 135

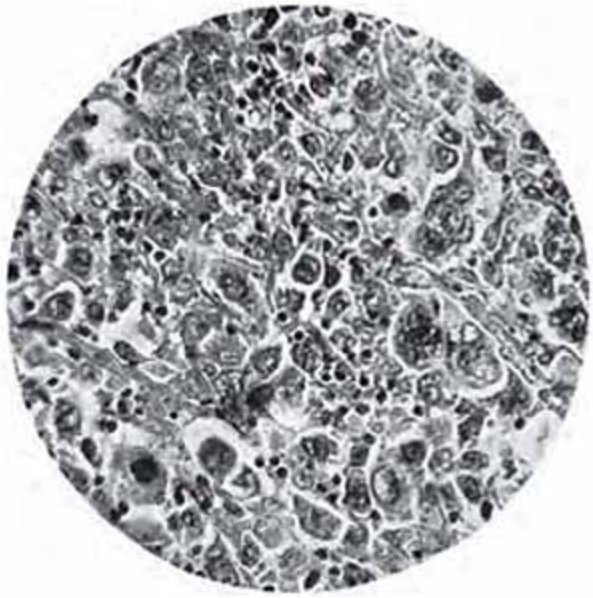

Fig. 3.—Section of the cervical tumor made postmortem, showing large, irregular giant cells, mitotic figures, hyaline interstitial fibrous tissue and a few lymphoid cells.

Fig. 4.—Section made through dura mater and growth in spinal canal, showing the growth NOT infiltrating the dura mater, also its inflammatory fibrous tissue character.

PLATE VII.

degrees and could be straightened out only with difficulty. Both heels presented black decubital ulcers. The tissues of the lower third of the leg were markedly œdematous. On turning the body over a large and irregular decubital ulcer was noted in the sacral region. The edges were thickened and the base sloughing. Several bony prominences including the spine of the ischium and the head of the left femur were freely exposed. On section the interior trunk muscles were found to be atrophic and the subcutaneous fat only fairly well preserved.

BRAIN: On removing the dura a minute rounded metastatic deposit came into view on the right side. The brain itself was small. The sulci were very deep and the convolutions narrow and atrophic. A section of the brain did not present any noteworthy features. The sinuses were free and the pituitary body was apparently unchanged.

On removing the tongue with the larynx, thyroid and upper œsophagus, the tumor mass previously described on the right side of the neck was partly dissected out and removed. It appeared to spring from the regional lymph nodes and bore no connection with the periosteum of the jaw or spine. It filled a space in the neck from the level of the skull almost down to the clavicle and lay close to the side of the spinal column. It was seen on section to be made up of innumerable rounded or oval bodies firmly bound together and presented a perfectly smooth, pale, translucent, glistening surface, the substance of which was firm in consistency. A number of yellowish apparently necrotic areas were found in this cut surface. Microscopic sections (Plate VII Fig. 3) made through different parts of this tumor showed a structure which was very different from the pictures presented by the sections removed and examined antemortem. There was present a very extensive production of fibrous tissue which was very dense, hyaline in appearance for the most part and distributed through the growth as a reteform arrangement. The interstices between this fibrous tissue framework contained a great variety of cells. There were numerous large multinuclear and uninuclear giant cells, none of which resembled in any way those which are found associated with tubercular or syphilitic lesions. The nuclei were not arranged around the periphery but were to be found in the centre of the cell, usually overlapping each other and occasionally presenting a roseate appearance. In addition other large cells were present with a dense protoplasm staining deeply by eosin, of which many of the nuclei even showed mitotic figures. There were a few plasma cells scattered through the section and an occasional eosinophile. The lymphoid tissue was almost entirely replaced and only a few cells remained to indicate its former presence. A superficial examination of these tumors might have led to the conclusion that the growth was sarcomatous, but taken in connection with the antemortem appearance and the tendency to fibrous tissue proliferation rather than new cell formation, it would appear that the process belonged more properly to the class of granulomata. This conclusion

was also favored clinically by the long duration of the disease and the lack of a tendency to infiltrate the surrounding structures which is a marked characteristic of sarcoma. Everywhere was found a marked tendency to the production of interstitial hyaline fibrous tissue which was true especially around the periphery of the growth, a situation where in a sarcoma we would expect to find a very cellular structure instead of a fibrous one.

The tongue, larynx and œsophagus were well preserved, although the mucous membrane of the larynx was bathed in considerable frothy material. The thyroid was small and on section the left lobe presented a faintly yellowish surface. In the centre was a small dark brown body which projected beyond the cut surface of the gland (parathyroid). The right lobe of the gland failed to show such formation.

SPINAL CORD. On opening the medullary canal a collar of tissue came into view in the middorsal region between the sixth and eighth vertebræ, which to the naked eye was similar to that found in the neck. On removing the cord and opening the meninges this tumor mass was found to be entirely extradural. Microscopically it showed a histological structure identical with that in the large tumor mass from the neck, but the interstitial hyaline fibrous tissue was much more abundant (Plate VII Fig. 4) The growth showed no tendency to infiltrate the duramater. The section of cord involved was small and showed evidences of compression. Microscopically the tissues of the cord appeared condensed at and below the site of the growth. There was no distinct demarcation between the tracts. Around the entire periphery and extending dëeply into the cord and along the site of the posterior horns were numerous large corpora amylaciæ. The piamater was considerably thickened and many of the arteries showed marked sclerosis.

THYMUS. Absent.

PLEURAL CAVITIES. There were dense adhesions posteriorly on both sides, more marked on the right than on the left. The diaphragm was normally placed.

PERICARDIUM. Unchanged.

HEART. Diminished in size, brownish yellow in color and rather flabby throughout. The endocardium showed no changes. The muscle tissue at the attachment of the posterior mitral leaflet was about one cm. in thickness. On section the muscle tissue presented a smooth brownish surface and its substance was very friable; microscopically the striations were found to be less distinct than normal and there was a slight excess of brown pigment about the nuclei. The pulmonary artery and the aorta were well preserved.

LUNGS. Both pale and moderately emphysematous. The peribronchial lymph nodes were enlarged immediately below the pleura near

the hilum of the left lung was a small flattened pale mass, which upon section presented a smooth rather translucent appearance. It extended down into the parenchyma for a short distance. Microscopical examination of this nodule showed a histological structure identical with that already described from the tumor of the neck.

PERITONEUM. Unchanged.

SPLEEN. Considerably enlarged, measuring about 16 cm. in length, with a tense capsule. On section the cut surface was reddish in color and presented innumerable gelatinous rounded bodies as large as the head of a pin, which on the application of iodine gave a typical reaction for amyloid material. Microscopically no thickening was apparent either in the capsule or the tribeculæ. Malpighian bodies for the most part were replaced by amyloid material. The pulp showed general congestion and extensive deposits of light brown pigment.

ADRENALS. Unchanged.

KIDNEYS. Surrounded by considerable fat and cut easily. The capsules could be stripped back readily, and the underlying surface was smooth and of a greyish red color in some places and in others studded with small cream colored nodules from which a purulent material was released when the capsule was stripped back. The cortices were for the most part very pale and bulged greatly beyond the cut edges of the capsule. They were not well differentiated from the medulla. The cortical markings were almost completely obscured by swollen, opaque, yellowish tissue. Scattered through the cortices and medulla of the lower third of the kidneys were numerous points and streaks of purulent exudæ, many of which were surrounded by reddish zones. The mucous membrane of the pelvis was swollen, pale and opaque, but no further changes were noted in the same. Microscopic sections of the kidney tissue showed marked parenchymatous degeneration, general congestion of the vessels and glomeruli, interstitial round cell proliferation and in places a constant exudation of leucocytes. There were numerous miliary abscesses present which could be traced as ascending along the connecting tubules from the pelvis.

BLADDER. Small, with walls greatly thickened. The mucosa was reddish, opaque and oedematous. At one point there was a small collection of pus beneath the surface.

UTERUS AND OVARIES. Normal.

LIVER. Greatly enlarged with the lower border of the right lobe displaced downward as far as the level of the umbilicus. The organ was yellowish in color, could be cut easily and the lobules were well differentiated. Microscopical sections of the liver tissue showed a general congestion and very extensive fatty degeneration. In places the fat replaced almost the entire liver parenchyma, causing a distortion which made their differentiation difficult. Many of the portal spaces showed an infiltration of round cells and an exudation of leucocytes. In the interior border of the right lobe of the liver was found a small, pale yel-

lowish grey nodule about 1.5 cm. in diameter. The histological structure of this nodule was identical with that found in the tumor of the neck.

PANCREAS. Normal.

GALL BLADDER. Normal.

STOMACH, INTESTINES, APPENDIX, COLON, RECTUM. Normal.

ABDOMINAL LYMPH NODES. At the lower end of the vertebral column on the left side near the sacro-iliac synchondrosis were found numbers of enlarged lymph nodes which were probably affected by the absorption from the posterior decubital ulcers.

CAUSE OF DEATH. Toxemia due to miliary abscesses of the kidney, cystitis and absorption from atrophic ulcers. The abscesses and ulcers caused by paralysis due to pressure on the spinal cord by a Hodgkin's granuloma affecting the lymph nodes situated in the posterior part of the dorsal canal.

CONCLUDING REMARKS.

It is generally conceded that Hodgkin's Disease is not accompanied by the formation of metastatic deposits in the manner which usually results in the presence of malignant new growths. The enlargements take place only in previously existing lymph nodes and may occur in any part of the body.

The condition noted in our case in which paraplegia was caused by the involvement of the lymphatic structure in the spinal canal is very unusual and it seems that only one other case of Hodgkin's Disease can be found on record in which this complication took place, that single instance having been reported by Osler.