1. A sputum lymphocytosis showing under the microscope 50 per cent. or more of the small mononuclear leukocytes (lymphocytes) with a moderate amount of albumin by chemical test speaks very strongly for the presence of a pulmonary tuberculosis.

2. In preincipient or incipient cases of pulmonary tuberculosis a lymphocytic sputum is usually present with a greater or lesser albumin content; in this the tubercle bacillus may be entirely absent or only an occasional bacillus found.

3. The presence of the mononuclear lymphocyte in sputum in preponderant amounts and a positive albumin test, is simply the forerunner or near the beginning of positive findings, for the tubercle bacillus if not already present in the expectorations will soon be found.

4. In a sputum giving a lymphocytic picture in the absence of tubercle bacilli, a positive albumin content has been demonstrated; this is confirmatory evidence that the sputum is that from a person suffering from pulmonary tuberculosis, and hence:

A careful microscopic study of every sample of sputum under examination should first be made for either the presence or absence of the tubercle bacillus; if this is negative and with a preponderance of the small mononuclear leukocytes in every field with a positive albumin finding by chemical test, in moderate amount, we are justified in assuming that the source of this expectoration is that found in a positively tuberculous individual.

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MYIASIS OF THE URINARY PASSAGES

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Myiasis is the general term applied to the occurrence of dipterous larvae in man. Though the larvae of many flies have been found, those most common are from the *Fannia scalaris*, the small fly frequently seen in the spring darting actively about under chandeliers or other pendent objects. A common name for it is "latrine fly," from its favorite resort.

This fly lays its eggs in dark, moist places, and the larvae may appear in from one to eighteen hours, depending on the warmth of the place of deposit. The larvae are full grown within from six to twelve days, but under favorable conditions, three or four weeks may elapse before they enter the pupal stage.

The literature on the subject is limited. Osler's "Practice" devotes a page to the general subject of myiasis, but does not mention its occurrence in the urinary passages. Stiles in Osler and McCrae's "System of Modern Medicine" gives up a few lines to the general subject only. The Library of the Surgeon General's Office furnishes but few titles.

Captain P. S. Lelean¹ collected a series of thirty cases. The earliest one was reported by Ambroise Paré in 1582. In most of these cases the larvae were believed to be those of the *Fannia scalaris* (formerly *Homalomylia*). He relates one remarkable case of myiasis externa. In 1842 an eminent London physician wrote as follows:

I saw hundreds of worms escaping from the skin. The carpet was covered with them where she stood dressing. They had the power of ejecting themselves to a distance of from 12 to 20 inches.

In 1899 Lieutenant-Colonel Smith saw a dipterous larva spring 3 feet. The saltatory powers of the cheese skipper will be recalled.

Cipriani² reports the case of a woman vagrant, badly constipated, who passed dipterous larvae in quantities from the vagina. A rectovaginal fistula existed. Cipriani believed that the eggs had been deposited on food and hatched in the lower bowel. The hard fecal masses in the rectum had aided the larvae in producing an ulcer which had perforated the rectovaginal septum, allowing the passage of the larvae into the vagina.

Réné Chevrel³ makes a careful analysis of all reported cases of myiasis of the urinary passages, and adds a case of his own. He concludes that only twenty such cases have been reported, six of which he regards as authentic, ten probable and four doubtful. His own case makes seven which are authentic.

He is of the opinion that while dipterous ova may be carried into the urinary passages by sounds or catheters, or in water used for irrigating, they generally are deposited about the meatus urinarius where are found the conditions favoring their growth, namely, darkness, moisture, warmth, oxygen and food, which last is furnished by a gonorrheal or other albuminoid discharge. The eggs hatch promptly and the young larvae pass into the urethra and on into the bladder in search of food. They require but little oxygen, and in the experiments carried out by Chevrel were kept under water for hours, becoming active when taken out. There is always some air in the urethra and probably in the bladder.

The contamination is favored by sleeping without cover in hot weather, flies having free access to the genitals and anal region. Women, wearing longer gowns than men, are less affected. On the other hand, women and children without proper underclothing are more liable to infection.

Chevrel's case was that of a paralytic of 55, wife of a farmer, who was left alone all day on a chair which had been converted into a commode by removing the seat and winding the framework with rags, the receptacle for the dejecta being placed on the floor and the flies being free to swarm at will about the buttocks. She passed larvae with the urine, daily, from May 19 into July.

REPORT OF AUTHOR'S CASE

Oct. 29, 1914, H. P., man, aged 32, living on a small farm in Virginia, who had been attending my service at Emergency Hospital, brought to my office an object that he had passed with the urine, which was later identified as a larva of *Fannia scalaris*. He had voided similar objects with the urine October 19 and 28, but had not brought them to me thinking that I would laugh at him.

This man had a chronic posterior urethritis and for some months had been in the habit of urinating in a glass when at home. This glass he kept in the shed at the rear of his house, turned upside down on a shelf, and it was always rinsed after using. He had been using a small syringe of hard rubber for urethral injections and had kept this wrapped in paper and in a closed drawer, so that, apparently, the larvae could not have been in the glass, nor the eggs or larvae in the syringe.

About 8 o'clock in the morning, while digging potatoes in his garden, he was seized with an intense desire to urinate, hurried to the shed, felt something pass with the urine and found the larva in the glass. He saw no motion. I received it two hours later and it was in a perfectly fresh condition.

1. Lelean, P. S.: Brit. Med. Jour., 1914, i, 245.

2. Cipriani: Il Morgagni, 1902, xlv, 384.

3. Chevrel, René: Arch. de parasitol., 1909, No. 3.

He has seen no larvae since nor was he able to find any in the feces after diligent search.

Contamination probably took place while seated long at stool, the flies being attracted by the presence of a slight urethral discharge. That larvae were voided ten days apart would indicate that they were from different infections. The larvae had evidently penetrated the prostatic urethra, judging by the patient's sensations, though the cystoscopic findings were negative.

I believe that the patient's word may be relied on and that this may be considered the eighth authentic case of myiasis of the urinary passages.

I am indebted to Dr. L. O. Howard, entomologist of the U. S. Department of Agriculture, for the identification of the specimen and for the copy of Chevrel's article.

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ADRENAL PRECOCITY

PRECOCIOUS DEVELOPMENT OF THE EXTERNAL GENITALS DUE TO HYPERNEPHROMA OF THE ADRENAL CORTEX

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The case to be reported presents one of those rare conditions of childhood in which with the precocious appearance of hair on the face and pubes, and the equally precocious development of external genitals, there appears an abdominal tumor due to the growth of a hypernephroma of one adrenal body.

In an exhaustive article on this subject, with the report of one case, Jump, Beates and Babcock¹ have collected from the literature records of seventeen cases, their own case making the eighteenth. In all the cases the conditions present were verified by a more or less complete necropsy. Other cases they find reported, but without necropsy, so that the diagnosis is in doubt. In one case necropsy showed both adrenals apparently normal, but the necropsy was brief, and the examination evidently superficial. Of the eighteen cases reported, fourteen were girls and four boys. In all there was an overgrowth of hair on the pubes, in fourteen an overgrowth on the face and in five in the axilla. There was overgrowth of the body, due to fat or muscular development, in all; facial acne with rough skin in some; precocious menstruation and development of the breasts in only one. Pigmentation of the skin was present in many, but in none anything like Addison's disease. Some showed mental precocity, but the majority were dull. There was a tendency in all to the development of the male characteristics at the expense of the female in the girls, and an intensification of the male characteristics in the boys. In all of the cases the tumor was found to involve the adrenal cortex, and in no case was a tumor of the medulla alone found associated with this precocious development.

As showing the peculiar change in sexual development, one case is referred to of a girl of 16 whose menstruation began when she was 15 years old and

ceased after one year. At this time she had developed a mustache and beard, and hair on her thorax. She became fat and her voice became masculine.

Of the eighteen cases reported, all patients died before they were 16 years old. Some were operated on and died shortly after. In others the growth was inoperable when the patient came under observation. Because of the hopeless character of the disease without intervention, the authors properly advise exploratory operation in the early stages of the development of the disease, hoping that the removal of the adrenal at an early stage might result in a cure.

REPORT OF CASE

T. R. F., boy, aged 5 years and 10 months, was referred to me July 6, 1914, by Dr. E. A. Moore, the family physician. In his letter arranging for the consultation the doctor referred to the precocious sexual development and to the presence of an abdominal tumor, the removal of which was desired. In reply to the letter I suggested that the case belonged to the rare class described in the journal referred to, and that it would probably be found inoperable. A few days later the patient came in, accompanied by his father and an uncle, Dr. N. F. Mason of Columbus. He was rather underdeveloped when born. The father thought the sexual development commenced when he was about 18 months old. He commenced to talk and walk at 9 months, and at 10 months he could talk well and "run like a partridge." After that his mental development ceased to keep pace with his physical. When he was 3 years old there was hair on the pubes and face, and he had a voice like a man, according to Dr. Mason. He was active and vigorous, and was quite useful in running errands. Probably in December, 1913, it was noticed that his abdomen was getting larger, and this enlargement continued and became quite rapid. The surface of the body became roughened, and covered more or less with sores, particularly on the chest and back, and acne developed on the face. The patient in height and weight was about normal for his years. The facial expression, however, seemed to be that of a man of 35 or 40. He had been shaving for some time. The face was badly marked with acne. There were great crusts over the upper chest and back. The chest looked very much as though it had been burned by Roentgen rays. The genital organs were apparently those of an adult, except that the testicles were small and not completely descended.

There was a large tumor in the abdomen, this being most pronounced on the left side. It was extensively adherent, and somewhat nodular. There seemed to be a second mass over toward the right, but no connection between the two could be determined. The legs were decidedly bowed, but this the father attributed to his walking so early. The child could utter some words, the voice being that of an adult, but he was mentally a mere child.

As the tumor was large and extensively adherent, and the child's general condition poor, it was evident that no operation should be considered and the child was sent home. While he was under my observation the urine was obtained, which was normal, though containing a faint trace of albumin. Blood-examination revealed; hemoglobin, 85 per cent.; red cells, 4,480,000; leukocytes, 14,000; polynuclears, 81 per cent.; small lymphocytes, 13.6 per cent.; large lymphocytes, 5.4 per cent.

The child's general condition remained about the same after his return home, but with gradual failure, and he died the morning of August 29. The necropsy was made by Drs. E. R. Shilling, pathologist to Grant Hospital, and H. M. Brundage, pathologist to Mt. Carmel Hospital, who reported as follows:

"Height 42 inches; chest measurement 24 inches, waist measurement 32 inches. Facial expression of a man of 40. Penis 4 inches long, with marked development of pubic hair. Testicles in the canal. Feet and legs enlarged. Linea alba distributed over the abdomen and around the ankles. The brain was removed, and appeared normal in every way. Pituitary body appeared normal, and was

1. Jump, H. D.; Beates, Henry, Jr., and Babcock, W. W.: Precocious Development of the External Genitals Due to Hypernephroma of the Adrenal Cortex, *Am. Jour. Med. Sc.*, 1914, cxlviii, 568.