7,000; haemoglobin, 65 per cent. At 9 p.m. he was given the 10 gr. quinine by the mouth. He slept until 1 a.m., when he had a moderate rigor, nausea, and diarrhoea, and passed a large quantity of black water. His temperature was 99° at 2 a.m. In the morning his urine began to clear, and by 7 p.m. was pale yellow, his temperature then being 98.8°. The examination of the black sample of urine showed one-third albumen, methaemoglobin crystals, and a few haemoglobin casts; the spectroscope also showed methaemoglobin.

Blood Examination, 11 a.m.—Red corpuscles, 3,000,000; leucocytes, 10,000; haemoglobin, 59 per cent.

Differential Leucocyte Count.—Polymorphonuclear, 77 per cent.; large mononuclear, 8 per cent.; lymphocytes, 13 per cent.; eosinophiles, 1 per cent.; mast cells, 1 per cent.

This examination showed a loss of over half a million of red corpuscles in a few hours.

On March 25th his anaemia was marked and he was slightly jaundiced.

Blood Count.—Red corpuscles, 3,000,000; leucocytes, 11,800; haemoglobin, 57 per cent.

Differential Count of Leucocytes.—Polymorphonuclear, 56 per cent.; large mononuclear, 21 per cent.; lymphocytes, 20 per cent.; eosinophiles, 2 per cent.; transitional, 1 per cent.

On March 26th daily hypodermics of 15 minims of Squire's arsenate of iron were ordered, and on the 27th euquinine gr. 2 three times daily. His progress was favourable, but his blood regeneration was slow.

Blood Count (March 30th): Red corpuscles, 3,320,000; leucocytes, 6,200; haemoglobin, 58 per cent.

He left on March 31st with instructions to continue iron and arsenic and euquinine for one month.

This experiment, deliberately planned and carried out, is one more proof that in some individuals under certain unknown conditions quinine produces haemoglobinuria. The antecedents of the case seem to indicate that the conditions which led to the formation (so to speak) of the haemoglobinuria idiosyncrasy were brought about by neglect of the use of quinine in the earlier stages of what may have been a special form of malarial infection and the consequent development of an intense and peculiar cachexia.

HODGKIN'S DISEASE AND ARSENICAL POISONING.

By WALTER BROADBENT, M.A., M.D., M.R.C.P.,
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THE following case of Hodgkin's disease is of particular interest from the effect of arsenic given medicinally.

A lady, aged 58, noticed in June, 1901, some slight swellings in the neck; she also for a few months before had been getting short of breath on slight exertion. In July she consulted a physician in London, who found "enlarged glands, occipital, cervical, subclavicular, inguinal, abdominal and pelvic, varying in size from a pea to a chestnut, all quite distinct, rather firm and hard." She also had slight oedema of the feet. In the lungs there were some scattered rhonchi, and the air entry in the lower half of the left lung was deficient, presumably from pressure of mediastinal glands. He diagnosed Hodgkin's disease, and ordered liq. arsenicalis *mv ter die*. At the end of a fortnight she went to him again feeling very much better, less short of breath, with no oedema of the feet, and a distinct diminution in the size of the glands, but she complained of a burning pain in the soles of her feet and had a slight purpuric rash on her shins. In consequence the arsenic was stopped, but there came on keratosis of the soles and slightly of the hands, followed by desquamation, increased pigmentation of the skin, and four weeks after the stopping of the arsenic a severe attack of herpes of the right side of the neck. This was succeeded by most intense and persistent neuralgia, which resisted all treatment. During this time the glands all rapidly decreased in size and in two and a-half months had almost disappeared, but then began to enlarge again.

When she came to Brighton at the beginning of October, 1901, she still had intense neuralgia and hyperaesthesia of the right side of the neck, but otherwise was in fair health. A few glands could be felt in both sides of the neck and in the groins, but none were larger than small beans. There was no evidence of mediastinal pressure, the heart and lungs were normal, and neither liver nor spleen were enlarged. The blood showed no leucocytosis. Under phosphorus there seemed no increase of the glands for three weeks, but they then began to enlarge rapidly. I then tried liq. arsenicalis in 2-minim doses, but in ten days there was some tingling in the feet and pain in the calves of the legs, so a return was made to phosphorus in large doses, and also as disinfectants of the alimentary tract sodium sulphocarbolate and perchloride of mercury; I regret that a trial was not given to lavage of the stomach, which has proved so beneficial in a few cases, but there was no evidence of dilatation. The glands steadily increased in size, the liver could be felt below the costal margin and the spleen was also enlarged. She had an irritating cough and was short of breath, the air entry in the left lower lobe was diminished. Since nothing delayed the disease except arsenic, I determined to try sodium cacodylate, and, beginning with ½ gr. hypodermically, I increased up to ½ gr. at the end of the week; after a week's interval without injections there was a slight diminution in the size of the glands and no symptoms of arsenical poisoning; ½ gr. was then injected every day for another week and the improvement continued. After

another interval of a week ½ gr. was injected every day for a third week. At the end of this there was a trace of albumen in the urine, so I deemed it safer not to give any more cacodylate.

The glands slowly decreased and all went well till the fifteenth day, when an acute attack of pleurisy started on the left side; she also complained of pain in the legs, which were slightly swollen. Two days later there was a friction rub on the right side and evidence of a moderate amount of fluid in the left chest; the legs were very oedematous and painful with several deep red erythematous patches upon them. Her pulse was 120, temperature not higher than 99° at night; the urine contained no albumen. Fluid rapidly accumulated in the right chest but did not increase in the left, there was also some fluid in the abdomen. A fortnight after the onset of the pleurisy I drew off 28 oz. of grey milky fluid from the right chest, a week later 32 oz. of the same fluid not quite so milky, and by Southey's tubes 15 oz. of serum from the feet. A fortnight later a final aspiration drew off 36 oz. of quite clear fluid from the right chest. The milky fluid did not look like pus, though microscopically it contained large numbers of leucocytes. The glands all rapidly diminished in size meanwhile, and the oedema of the legs quite disappeared and she seemed to be making progress for a time, but the swelling of the glands began to return, and she finally developed great irritability of the stomach, which resulted in her death from exhaustion in April.

This is a case of Hodgkin's disease in a person peculiarly susceptible to arsenic; it is interesting to note that the glands diminished under arsenic with quite unusual rapidity. The pleural effusion, ascites, and oedema I cannot help attributing to the sodium cacodylate, since the glands were steadily becoming smaller before and during this part of the illness, and these symptoms were present in some of the victims of the recent arsenical beer epidemic.

In going through the literature of Hodgkin's disease, a case reported by Dr. J. H. Bryant in the BRITISH MEDICAL JOURNAL of September 14th, 1901, p. 706, struck me as of peculiar interest.

A man, who had noticed the presence of enlarged glands for four years and had been unable to work for the past six weeks, and presumably had been under treatment outside, was admitted to hospital with the gland trouble well marked, but in addition he had a cough and occasionally spat up bright red blood. No tubercle bacilli could be found and there was no evidence of phthisis; he had a right pleural effusion. He used to "vomit after meals, and also complained of an acid taste in his mouth"; another troublesome symptom had been "itching of the skin, which was rather dusky." There was some albumen in his urine; the pulse was 108. He was ordered 6 minims of liq. arsenicalis three times a day. A fortnight later "there was marked oedema of both legs, the penis and scrotum, and over the sacrum and abdomen up to the manubrium." A fortnight later still the skin appeared to be more dusky, the dullness had increased on the right side of the chest to the level of the second rib. The arsenic was increased to 7 minims. A week later paracentesis abdominis drew off "5½ pints of turbid and rather milky fluid. The turbidity was not cleared up by ether; a good many leucocytes were found, but no fat globules." A week later "9 pints of chylous fluid were withdrawn"; a week later still 63 oz. of clear fluid were drawn from the right chest, and the abdomen was again tapped. Then the man died.

Turning to Dr. E. S. Reynolds's description of arsenical poisoning in the BRITISH MEDICAL JOURNAL of December, 1900, one finds: "The face is dusky red.....In many cases there is persistent vomiting.....In some cases much itching of the skin.....A few patients have spat blood, there being no symptoms nor physical signs of phthisis.....There is sometimes very marked general oedema like that seen in beri-beri."

One can hardly doubt that the case I have just quoted suffered from arsenical poisoning. Then, as to the fluid drawn off from the abdomen, it is called chylous, evidently because the cause was supposed to be blocking of the lacteals by large glands; but the description "turbidity, not cleared up by ether, a good many leucocytes but no fat globules," shows that it is not chylous, but of the same nature as the fluid drawn from the pleural cavity in my case.

At the necropsy "three pints of yellow fluid were found in the right pleural cavity. The right lower lobe was covered with recent yellow lymph which readily peeled off, beneath it were many subpleural ecchymoses. Several hard nodules could be felt in the lower lobe of both lungs. There was a good deal of fibrous tissue infiltrating the lungs. Microscopically the nodules were made up chiefly of fibrous tissue, and in places there were collections of lymphoid cells." After the description of the other organs there came the following remarks: "The macroscopic appearances of the organs were most peculiar and by no means characteristic of lymphadenoma. The most marked feature presented by the sections examined microscopically was the large amount of fibrous tissue present. This was peculiarly noticeable in the glands, spleen, and liver. In the liver the fibrous tissue was unequally grouped between the nodules, but was by no means confined to this area, for in many places it was infiltrating the lobules themselves, here and there replacing and here and there surrounding the liver cells; in fact, the change had the appearance of a mixed interlobular and intracellular cirrhosis. There was only one part of the body in which a lesion quite typical of lymphadenoma could

be found, and that was in the pericardium. After saying that no history of syphilis or alcoholism had been obtained, and that the changes super-added to the lymphadenoma did not correspond with either accurately, he concludes that "without doubt some other change, such as that which may result from syphilis and alcoholism, must be added to lymphadenoma to explain these pathological changes satisfactorily."

The man had been troubled with large glands for four years, probably in that time many doctors had diagnosed the case as one of Hodgkin's disease, and all of them would have prescribed arsenic. It seems likely, therefore, that this is a description of the changes wrought by constant doses of arsenic, an arsenical cirrhosis of the liver, spleen, and lungs.

Professor Osler, in his *Textbook of Medicine*, describing Hodgkin's disease, says:

In connexion with the affection of the abdominal glands there may be bronzing of the skin....Bronzing may occur, and occasionally a most intense and troublesome prurigo....Palpitation is common....Pleural effusions are not uncommon....Often there are dropsical symptoms.

Dr. Murray, in Clifford Allbutt's *System of Medicine*, says:

The solar plexus may be implicated with bronzing of the skin as in Sir W. Jenner's case, in which Sir W. Gowers found the solar plexus was involved, though the suprarenal capsules were unaffected....Effusion into the pleural cavity often takes place, either as a part of a general anasarca or as a result of pressure on the azygos or bronchial veins....Diarrhoea may take part in bringing about the fatal termination.

Is it not probable that most of these are symptoms of arsenical poisoning? Dr. Reynolds in his papers on the effects of arsenic says:

Many of the cases are just like Addison's disease....Much itching of the skin....Sometimes there is very marked general oedema....Diarrhoea has been noted in the acute cases.

In other diseases usually treated with arsenic one may also meet with possible signs of poisoning. A few months ago I was told of a case of pernicious anaemia where sudden general oedema supervened, though the blood count had markedly improved under arsenic; and may not the "pigmentation of the skin," "oedema," "ascites," "sensory disturbances" mentioned in accounts of pernicious anaemia and leucocythaemia, and the cirrhosis of the liver in Banti's disease, be due to arsenic, and even the vomiting and diarrhoea, which often are the cause of death?

CASE OF SEVERE BELLADONNA POISONING.

By GEORGE R. LIVINGSTONE, M.B.,
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THE notes of the following case of severe poisoning through the application of a belladonna plaster are of some interest as an illustration of the tendency at the present day to self-medication, very largely due to the knowledge derived from "newspaper medicine" as described in the *BRITISH MEDICAL JOURNAL* of January 24th, 1903, p. 211. There seems to be a twofold danger in this growing tendency on the part of the public to play the amateur physician. There is the danger from the wrong use of a drug, and there is danger through symptoms being masked and the correct diagnosis rendered more difficult.

On December 24th, 1902, I had occasion to see a patient who was suffering from influenza. His attack lasted a few days, and he appeared to be making a fairly good recovery. On January 1st, 1903, he showed symptoms of cardiac trouble. In addition to medicinal treatment complete rest was enjoined. In a few days the action of the heart appeared to be normal, at all events while the patient remained recumbent. As it seemed impossible for him to abstain from business, and as his business books were being brought over to his house, he went, on my recommendation, to the country on January 5th. It seems that after five days he felt so well, and business matters seemed so urgent, that he returned home, feeling quite "fit," on Saturday, January 10th.

By Monday, the 12th, he was beginning to feel out of sorts, and was suffering from pain in the back, a "fluttering" sensation over the region of his heart, etc., and altogether at this time he felt very seedy, but, having disobeyed orders, he was afraid to consult his medical attendant. Upon the following evening I got an urgent message to go over to his house at once, as he had fainted. I saw him between 6 and 7 p.m. I found he was suffering from severe pain in the back and head; the pain in his back, however, was his chief complaint, and his wife told me that she had applied a belladonna plaster to it shortly before. He also complained of shortness of breath and of a sense of oppression over his chest. His pulse was very irregular in strength, and there were occa-

sional intermissions. He complained of some thirst, and on taking his temperature I found it was 101°. I prescribed for him, and, as his condition was undoubtedly critical, I said I would see him later in the evening. I had barely reached my house when a messenger came over asking me to return at once, as the patient had had a fit. I saw him shortly afterwards. From his wife's description of the fit, he had evidently had a severe rigor, and I found on taking his temperature that it was 102.6°. His chief complaint was still, however, of severe pain in the back. He showed a slight tendency to become delirious.

The possibility of belladonna poisoning did suggest itself to my mind at this stage, but I at once dismissed it, as the plaster had only been applied shortly before my first visit, which had been made about an hour previously, and I could not recall having seen even slight symptoms of poisoning after so short an application. Besides his most prominent symptoms had commenced before the belladonna plaster was applied. I did not therefore remove the plaster.

I saw the patient again about 11 p.m. His heart's action was exceeding feeble and irregular. His wife said he had been rambling a little, but he seemed sensible enough during my visit, and answered all my questions quite intelligently. His temperature was 102°. His respiration was very rapid, but I could detect nothing abnormal in the lungs. He had had several of what his wife called "fits," but these seemed to me, from her description, to have been rigors. I had obtained a specimen of his urine, and found it was normal. There was no dilatation of his pupils. I was sent for about midnight, when the patient was supposed to have had another "fit." I did not see him in this, but saw him shortly afterwards, when he was apparently completely paralysed in his right arm and leg, and his speech seemed to be affected. I gave some additional directions, and left feeling very anxious about the case, and resolved that if the patient survived till morning I would recommend another opinion.

About 2 a.m. I was asked to go over to see the patient, who was said to be much worse, and they thought dying. I went over, and found he was heavy and drowsy, and only roused with difficulty. On examining his eyes I found his pupils widely dilated. He had had some vomiting shortly before I was sent for, and his wife told me that he had been very delirious since my last visit.

There was now no doubt that whatever else he was suffering from, his acuter symptoms were due to severe belladonna poisoning, and arising from a belladonna plaster applied to his back only a few hours previously. To have rapid and severe poisoning by absorption through the skin after a comparatively short application seemed so unique that I could hardly believe it possible. I at once proceeded to remove the plaster. Upon its removal I found the skin reddened over the whole area covered by the plaster (an area of about 10 in. by 7 in.), and at one or two points actually blistered.

Here, then, was the explanation of the rapid absorption. But how had such a condition of the skin been brought about? On inquiry I found the plaster had been obtained from one of the best chemists, and we could not therefore blame the plaster. A little cross-examination brought out the whole story of the domestic practice of medicine by the wife. The pain had been "excruciating," and she applied a mustard poultice. After half an hour's application there was no relief. A turpentine fomentation suggested itself, and was applied; several were applied in quick succession; but the hoped-for relief to the patient did not come, and having heard from a servant that a liniment she had procured from a chemist for some obscure pain had "lifted" the pain at once, what remained in this bottle was freely applied and vigorously rubbed into the back of the unfortunate husband by this would-be healer of the sick. Still no relief. Dry mustard was then rubbed into the part. The pain remained practically the same, and the wife consulted a chemist, and was advised to apply a belladonna plaster. This was done. Later my services were called in because the pain continued very severe in spite of this energetic treatment. Whether this was the original pain or a new pain is a matter of doubt. The patient is now inclined to think that the original pain had really been removed, and that it had been replaced by a new pain. He did not appreciate the difference at the time; he only knew that his back was very painful.

After the removal of the plaster the patient rapidly lost the delirium, and the threatening coma passed off; and in an hour's time his condition had greatly improved. The irregular action of his heart, although no doubt aggravated by the