Notes of three cases of acute yellow atrophy of the liver / by Dyce Duckworth, M.D. and J. Wickham Legg, M.D.

Professor J. Hughes Bennett with the Writers' Compts

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Notes of Three Cases of Acute Yellow Atrophy of the Liver. By Dyce Duckworth, M.D. Edin., and J. Wickham Legg, M.D. Lond.

THE following cases have been recently admitted into the Wards of the Hospital, and some special interest attaches to the fact that the first and third occurred in the persons of sister and brother respectively.

In two of them, unfortunately, no post-mortem inspection could be procured. However, portions of the livers were obtained by means of punctures, and were subjected to microscopic examination.

Case I.

(Notes by Dr. Legg.)

A girl, æt. 10, was brought to St. Bartholomew's on May 2, 1870. Her sister, who came with her, said that she had been jaundiced for the last few days. When examined, the skin and conjunctivæ were found to be yellow, though not very deeply stained: nothing else was peculiarly noticeable; and I thought it was one of those cases of jaundice occurring in children, which are so very common, but so little understood. The child came again to the Hospital on May 9 and May 16: at the latter time the skin was far more deeply stained; but percussion and palpation of the abdomen discovered nothing as to the liver or any other organ. The hepatic dullness was quite natural. On May 19 the friends came and stated that the child had been delirious since the early morning. Brought to the Hospital shortly after, the child was found to be unconscious. On examination I thought that the hepatic dullness was somewhat diminished both at its upper and lower margins.

The child was at once admitted into the Hospital: on questioning the friends further, I was told that before the jaundice came on, the other children in the court in which the patient lived had been greatly teasing and tormenting her; the child had not been noticed to suck matches, nor did the friends know of any means by which the child could get at phosphorus.

By Dr. Harris's kind permission the following notes, taken from his Ward Book, are added:

May 19.—Is somewhat wasted, and the whole integument excessively jaundiced. Pulse 120 to 130. Chest is well formed. Respiratory and cardiac sounds are normal. The hepatic dullness is somewhat diminished, and cannot be traced below the seventh rib. The abdomen is soft and flaccid, and allows of free depression; but the margin of the liver is not to be detected. Has repeated attacks of the most furious delirium with intervals of comparative ease and sleep. Temperature 99·4° F. Ordered pil. hyd. gr. v. and pil. rhei. co. gr. v.

May 20.—Passed a quiet night after taking the pill: has had no return of the delirium. Is now in a comatose condition. Had almost incessant vomiting of semibilious and bloody fluid during the morning. The bowels have not acted since admission. Died at 4 P.M.

As the patient passed urine involuntarily, none could be obtained during life for examination.

The post-mortem examination was made twenty hours after death. Weather warm.

The skin was everywhere stained a deep yellow colour, except on the backs of the arms and trunk, where the surface was of a deep livid violet. A chocolate-coloured fluid was escaping from the nose and mouth. Rigor mortis was present. The body was fairly nourished: no ecchymoses were noticed on the skin.

The spinal chord was not examined.

The sutures and calvaria were natural. The longitudinal sinus contained no clot. The convolutions seemed more pressed against the skull than natural. The ventricles contained about half a fluid-ounce of a turbid fluid. The fornix was much softened and could not be raised. The venæ magnæ Galeni were natural. At the base of the brain, along the fissure of Sylvius, and over the central parts of the base, the membranes looked perfectly healthy. The optic thalami, corpora striata, crura cerebri, pons Varolii, medulla oblongata, together with the cerebellum and circumferential parts of the brain, showed no signs of disease. The vessels and brain substance were not examined microscopically. The sinuses at the base of the skull contained a considerable quantity of semi-fluid blood.

The larynx, tongue, and pharynx were not examined.

On opening the abdominal cavity, numerous ecchymoses were seen studding the omentum and colon.

The liver was adherent by a few old adhesions to the diaphragm; it did not seem to be shrunken in size.

The pericardium contained a small quantity of deeply-stained serosity: its visceral portion showed numerous ecchymoses. The endocardium and valves were natural: the muscular tissue looked healthy to the naked eye; and portions of the papillary muscles, and the wall of right and left ventricle showed under the microscope no change in striation. Both lungs were quite free from disease.

The cæcum and colon were filled with scybalous masses of a pale clay-colour; the appendix vermiformis contained a number of hairs. The duodenum and small intestines contained a quantity of very dark, almost black-coloured, viscid material: about an inch below the pylorus there was a small ulcer about the size of a threepenny piece, covered by a coagulum of blood.

On dissecting and laying open the gall ducts, the common duct was found to contain a yellowish fluid, and this yellowish fluid was found in all the ducts. An inch from the commencement of the cystic duct there was an enlarged lymphatic gland; and at the exit of the cystic duct from the gall bladder was another enlarged lymphatic gland. The gall bladder contained a few drops of a viscid greenish fluid which gave no reaction with Pettenkofer's test.

The stomach contained about four fluid-ounces of a fluid resembling chocolate in colour and consistence. The mucous membrane had a macerated look. A section made with Valentin's knife, and examined with the microscope showed extreme fatty degeneration of the tubular glands. The small intestines were natural. The supra-renal capsules were healthy.

The capsules of both kidneys separated with natural ease, leaving a smooth surface behind: on section the cut surface showed a granular appearance, and the cortex was slightly opaque. The bladder contained about four fluid-ounces of a fluid which contained bile-pigment, as shown by Gmelin's test, in great abundance. It contained, also, urea and albumen. The deposit showed no crystals, but only oval and spheroidal epithelium under the microscope.

Bladder, uterus and ovaries, aorta, vena cava, and vena portæ quite natural.

The liver showed, on the upper surface of the right lobe, considerable mottling, the natural liver colour being broken by islets, the size of a sixpence or a shilling, of a bright yellow colour. The organ was flaccid, and felt doughy. The yellow spots, when cut into were seen to be continued into the

substance of the liver, and to be mixed with healthy coloured liver substance. The acini were still quite distinct. The knife was rendered distinctly greasy. In the left lobe there was a light yellow staining of the whole liver substance, and no distinction of acini could be made out.

The spleen was soft; pulp and follicles natural.

Microscopical Examination of the Liver and Kidneys.—Portions of the right and left lobes of the liver and of both kidneys were hardened in chromic acid. In the sections from the left lobe of the liver no trace of acini could be detected when viewed with a low power (× 80). The section was extremely dark, but the dark material seemed equally distributed. On examining with a higher power (× 270) no trace of liver cells could be found: the sections showed only an extremely dark and granular appearance, with large and small globules of fat and balls of pigment about the size of a granulation corpuscle. In the sections from the right lobe, a few hepatic cells remained undissolved, but in other respects the appearances were identical with those of the left lobe. No crystals of any kind were observed.

The tubules of the kidney were filled with a dark granular material, looking quite black by transmitted light: only here and there were a few epithelium cells discovered, and these were filled with granules and fat.

Case II.

(Notes by Mr. Cheyne, Clinical Clerk.)

E. P., æt. 23, a metal worker, was admitted into Radcliffe ward on August 23, 1870, under Dr. Duckworth's care. Is a short and slightly built man, with brown hair, and anæmic, jaundiced complexion. Skin moist. No itching. Lies most comfortably on his back or on his left side. The conjunctivæ are pallid and icteric, pupils dilated. Thin sordes upon lips. Tongue covered all over with thin white fur. Pulse 116, of small volume and feeble.

The chest is hyper-resonant, and no cardiac dullness is elicited by percussion. There is epigastric pulsation, and the sounds of the heart are more loudly heard in this situation than at the left nipple. Respiration natural.

The liver dullness measures three inches vertically in the right mamillary line. The urine cannot be procured, but the patient's linen is seen to be stained with bilious marks. The motions are pale. There is anorexia, but no sickness to-day.

History.—The patient was compelled to give up his work on the 17th inst. owing to pain in his chest and umbilical

region. The pain continued the next day, and nausea was felt. Two days subsequently vomiting occurred, and there was feverishness and thirst. The bowels were confined at this time, and headache was complained of. The abdominal pain prevented sleep at night. No further history could be procured.

To-day (24th inst.) headache continues; pulse 116; bowels open; bilious urine passed with the motions which are pale. Complains of severe pain across the epigastrium. The diagnosis was acute atrophy of the liver. Ten grains of calomel and colocynth pill were ordered, and the hospital effervescing draught of tartrate of soda every six hours.

25.—Had a bad and sleepless night. Pulse 112, soft. Pupils dilated. Very dejected and drowsy. Jaundice much increased; abdomen very tender on pressure. Is very thirsty, but can take nourishment readily. Bowels open; urine passed at same time; motions quite pale, with ashy-coloured adherent mucous patches.

During the day the patient became delirious and finally comatose. The vomiting ceased. The ejecta were never dark or bloody. In the evening the man died.

The next day Dr. Duckworth passed a Duchenne's muscle-hook into the hypochondriac region and withdrew a portion of the liver which was examined under the microscope. The hepatic cells were found in abundance, but containing a great excess of oil globules. In the field there was also much oily and granular matter, with bile pigment.* The friends could furnish no satisfactory early history of the case, and resolutely forbade any examination of the body.

Case III.

(From Notes by Mr. Langridge, Clinical Clerk.)

J. M., æt. 19, foreman lithographic printer, a somewhat emaciated, dark-haired young man, was admitted into Mark Ward on February 7, 1871. Expression vacant, skin and conjunctivæ deeply jaundiced. Surface cool, moist, and clammy; face unctuous. Decubitus dorsal. Tongue very dry and brown, lips dry, breath offensive. Temperature 95·5° F., pulse 60, feeble, regular, dicrotous. The cardiac and respiratory sounds clear but feeble. No cough. Abdomen tense, recti firmly contracted; bladder distended. The muscles of

* Vide p. 214, where comment is made on the peculiarities of this method of examination.

the upper and lower extremities wasted and flabby. No œdema. The bowels were reported as regular, and the motions pale; urine also said to be scanty and very dark.

During the last fortnight the appetite has been voracious. There is often sickness but not especially after meals. The patient has vomited once since admission greenish sour-smelling fluid with particles of undigested food in it, acid in reaction. Is only partly delirious, and protrudes tongue when told to do so.

History (obtained from mother).—About October 1870, the patient first appeared to fail in health, but did not complain. He has lost flesh since that time. His mother believes that the anxiety and responsibility of his work as foreman, at so early an age, proved too severe a strain upon his energies.

A fortnight before Christmas he caught cold, and for five weeks he complained of pain in the right hypochondrium, shooting between the shoulders. This soon passed off and he gradually became jaundiced and somewhat drowsy. Three weeks ago he began to vomit, and has been sick two or three times daily during this period. On one occasion the ejecta were very dark and streaked with blood. The drowsiness has increased of late. A week ago he was delirious for two days, and was so violent that he struck his attendants. Two days ago he became again delirious, and remains slightly so at the present time.

Family History.—His father was robust, mother is not strong. Lost a sister æt. 10 (Case I.) nine months ago from acute atrophy of the liver. Two other sisters have had jaundice but recovered.

Was ordered gr. xv. of chloral hydrate in the evening, and gr. iv. of calomel with ℈j. of compound scammony powder, also the effervescing tartrate of soda draught of the hospital every six hours. Milk diet. Ice. Brandy.

February 8.—Had a good night. Less drowsy and quite conscious. Bowels have acted, and pipeclay-coloured stools have been passed. Urine is copious, very bilious, but free from albumen. Tongue not so dry as yesterday. Pulse 52, irregular. Temperature 98° F. Hepatic dullness falls within lines marked yesterday. Abdomen retracted. No sickness. Ordered a mixture with the sulphate and carbonate of magnesia, out of some aromatic spirit of ammonia and peppermint water, every four hours, and to stop the effervescing soda draught.

9.—Seems better. No sickness or delirium, urine copious, very dark, bowels freely open. Pulse 50. Temperature normal (98·4° F.).

10.—Bowels twice moved, motions solid and pale. Urine passed copiously and of same character.

11.—Had a good night. Pulse 72. Temperature normal. Bowels open three times, motions solid.

12.—Vomited a great quantity of 'coffee-ground' matter. Seems in much pain and shrieks out occasionally. Sordes on lips. Jaundice very deep. Bowels open, stools pale and with some blood in them. Takes all the nourishment that is offered. Died in the afternoon.

Permission to examine the body being refused, Duchenne's muscle-hook was employed to remove a fragment of the liver. There was absolutely no dullness on percussion over the hepatic region, and it was with difficulty that a portion of the atrophied organ was secured and extracted through an aperture in the fourth right intercostal space. On examination the outline of the hepatic cells was sufficiently distinct, and nuclei were well seen. There was an excess of fatty and minute granules in the cells, and much similar matter free on the field of the microscope. Some cells contained double nuclei. There were dark masses which may have been either pigment or particles of tyrosine. It is important to bear in mind in considering the results of this examination, and also of that made in the last case, that the portions of the livers secured were probably such as had suffered in a less degree from the atrophic process than other parts. The instrument broke up the soft and most gravely-affected portions, and doubtless only brought away what was most firm and coherent. It is found that the liver in these cases is not always involved throughout its entire substance; the morbid process is more advanced in some portions than in others.

The urine was examined for leucine and tyrosine. It was evaporated over a water bath and treated with absolute alcohol. Masses of tyrosine were procured in long white acicular crystals, but no leucine was distinctly recognised.

The house in which Cases I. and III. had lived was inspected; it was situated in a wretched court off Aldersgate Street. Nothing noteworthy was observed as to peculiar unhealthiness, and it appeared to differ in no respect from the other surrounding, and equally squalid, habitations.

Commentary.—The marked improvement which occurred in the last case for two or three days after admission appeared to be coincident with the smart purgation which was set up by medicines. The pulse, however, remained very low, only half as frequent as in the second case at a similar period of the disease. Possibly the patient might have been saved if he had come earlier under treatment.

The observations on the temperature in these cases, so far as they were carried out, are interesting. In Case I. the little girl in the fourth week of the illness, and while delirious the day preceding her death, had a temperature of 99·4° F. In Case III., in the second month of the disease, five days before death, the temperature was as low as 95·5° F.; next day it went up to 98° F., and the day before death it was normal (98·4° F.). There was never pyrexia, and these facts are in accordance with previous observations.

Cases I. and III., and those of two of their sisters who had jaundice and recovered, forcibly recall those instances related by Graves and others, and quoted at length by Dr. Budd in his work on 'Diseases of the Liver,'* where this disease occurred amongst various members of the same family, and some of the cases recovered and others ended fatally.

Budd attributes such instances to the effect of some peculiar and local poisonous influence. The histories of the three cases here described do not, however, throw any light upon this point; neither could anything be ascertained as to the development of a specially noxious agent within the body itself sufficient to set up the disease. Dr. Budd has also suggested this latter theory. The ages of these patients varied from ten to twenty-three years, and this is in accordance with previously observed facts as to the sufferers being generally under middle age. There was no history of syphilis in either of the males, but a distinct period of depression and overwork was noted before the occurrence of the last case. A review of most of the recorded instances of this fatal form of jaundice would lead to the belief that several factors are concerned in the production of the various phenomena, no one alone of which appears to have the power of inducing the disease.

In two of these (Cases I. and III.) there was an interval between the early symptoms of illness and the jaundice, and the more special and grave onset of the nervous affection. This is a peculiar and well-ascertained fact in the histories of most cases of acute atrophy of the liver. A noteworthy point, in connection with other symptoms in the diagnosis of the disease, would seem to be the occurrence of severe hepatic pain associated with a temperature either natural or even below the normal.

* P. 241.

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