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CASE OF

FATAL PURPURA

ASSOCIATED WITH

WAXY DEGENERATION OF THE STRIATED MUSCLES, AND ALSO OF THE VESSELS IN THE AFFECTED PARTS.

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I PUBLISH the following case of purpura in an isolated form, in the hopes that the observations which I have made upon some of the lesions found post-mortem, may induce others to compare them with their own experience; and, inasmuch as fatal cases of purpura are not of very frequent occurrence, and the hæmorrhagic tendency which we express under this name may probably depend upon more than one anatomical alteration, it appears to me desirable for as many as possible to contribute what lies in their power to the elucidation of the pathology of this somewhat obscure malady.

R. L., aged thirty-three, married, grainer in wood, admitted into the University College Hospital, May 16th, 1865; a native of London; father and mother living, both about sixty years of age, and healthy. No history of any hæmorrhagic diathesis in the family either on father's or mother's side. Has five brothers and three sisters all living and healthy, except one sister, who died of small-pox in extreme youth.

Previous diseases.—Has been vaccinated and not had small-pox; has had measles, scarlet fever (?), and gonorrhœa some years ago. No other illnesses before present.

Habits.—Lives well and has good wages. Drinks about a pint and half of beer daily, and occasionally some spirits on Saturday, and strongly denies any habits of intoxication. Eats fresh meat and vegetables in ordinary quantity daily. Is not in habit of eating salt meat.

Present illness.—Always enjoyed perfectly good health until November, 1864, when he contracted an indurated chancre, followed by indurated bubo, which disappeared without suppurating; he took pills at this time which made his mouth sore; after this he continued well until the middle of April, 1865, when he was attacked with sore throat, and some ecthymatous pustules appeared at the same time on

the scalp. He took no more mercury, with the exception of a few doses of bichloride. He took iodide of potassium for some time, but not continuously.[1] Since sore throat supervened he has felt very ill, and has been able to do very little work for the past three or four weeks. About a week before admission he first noticed some swelling on the inside of both thighs, of a reddish hue, and attended with considerable pain; the discoloration and swelling quickly spread over the inside of the thighs, and the colour changed to purple. A purple eruption first appeared on the face on May 16th.

Present state, May 16th.—Aspect of great suffering; patient almost unable to lie many minutes in one position; on face are some patches of a mingled papular and tubercular eruption, passing here and there into a vesicular form, all of a deep purplish-brown colour, and affecting the forehead, eyebrows, root of nose, and lower and upper lips. On scalp are several ecthymatous pustules. On right ear are several purpuric spots. Skin over these is hotter to hand of observer than on opposite side, is painful, but not indurated. Whole of back of left hand is greatly swollen, pits on pressure, feels very hot, and is of a dull, dusky-purple hue. Besides this swelling there are several small purpuric spots, not attended with swelling or induration, on the thumb and fingers. The whole of the upper part of right arm is greatly swollen, and of a reddish-purple hue; the only spot not affected is a portion of skin over the biceps muscle. The skin is indurated, brawny, intensely painful, and very hot. The dull purple of the centre fades off to a reddish hue at the margins. The length of this patch is nearly seven inches. At one place it completely encircles the arm, in other parts its average diameter is about six inches. Similar patches of nearly equal extent occur on the other arm. The whole of the anterior part of the left thigh, and in some places the whole circumference of the limb, is indurated, brawny, painful, and of a dark reddish-purple. Many similar spots occur on the opposite limb. Numerous petechiæ cover the leg below the knee. Calves of legs are of brawny hardness. Skin above ankles is œdematous, and pits on pressure. Skin of scrotum is œdematous, and there are here one or two patches of a purplish colour, where ulceration has already commenced. There are also two patches, of about four inches in diameter, on the back, of same characters as in rest of body; a few smaller ones are also found on front of chest. The abdomen has fewer marks of the kind than any other parts of the body. No perspiration on skin. Patient's movements are tremulous; he has great difficulty in conveying a cup to his mouth. The effort requires both hands, and motions of arms are very tremulous, and are effected with great difficulty, but there is no impairment of volition, or any misdirection of movement. Hæmorrhagic sordes on gums; breath horribly offensive; patient hawks up a thick gelatinous mucus mixed with blood. There is a deep, ragged

[1] I am indebted for the details of his previous treatment to inquiries kindly made for me by Mr. Fuller, of Albany-street, of the chemist who prescribed for the patient before he came under his own supervision.

ulcer, with evident syphilitic characters, on the left tonsil, and petechial spots are seen over whole of roof of mouth, soft palate, and fauces. Tongue furred, stained of a reddish-brown, is protruded without difficulty. Great thirst; no vomiting; appetite bad from difficulty of swallowing; no diarrhœa; bowels said to be regular. Slight cough; slight dulness at right apex posteriorly, none elsewhere; respiration over chest healthy. Heart's apex in normal situation; percussion dulness normal; sounds normal at apex and base; pulse 128, weak, regular; respiration 30. Blood under microscope contains a great excess of white corpuscles. Red corpuscles aggregate into rouleaux with ordinary characters, and present no deviations from normal appearance. To have claret Oj., asparagus, beef-tea with pounded meat, milk. ℞. Pulv. opii, gr. j. ter die.

May 19.—Purpuric spots have much extended since last report. Large vesicles filled with discoloured serum have appeared on thighs and arms. Swelling on left hand is now more intensely coloured, but has not yet assumed dark purple hue of other affected parts of body. Back of right hand is now swollen and intensely painful. There is also pain in the palm of the hand. State of legs below knees is the same as at last report. No increased failure of motor power.

Heart.—There is now a soft blowing murmur with first sound heard with greatest intensity at second left interspace; heard also, but less clearly, at apex, and not conducted into axilla. The whole of walls of thorax are tender and painful, and the lower axillary regions pit, on pressure. Left axillary region is dull below sixth interspace; in back, dull below ninth rib. Fine friction and crepitation can be heard below this level, but not above. Right base is dull below sixth rib in front, and eighth rib in back. Friction and fine crepitation also audible here. Vocal resonance weak at bases. Vocal fremitus increased. On 18th had a pale solid evacuation. Took last night pil. calomel., gr. v.; haust. dom. this morning. Bowels have not yet acted. To have tinct. larch bark, ℥ss.; aquæ, ℥j. ter die. To have pulv. opii once daily, and sol. arg. nit., gr. xv., ad aq. ℥j., applied to throat daily.

May 20th.—Bowels acted freely after last visit; motions good colour. Skin now perspiring. Pupils somewhat contracted. Some small additional purpuric spots on abdomen. Skin in centre of swellings in thighs appears dead and without sensation. Some sputa seen, are of dark red, and very tenacious. To have pulv. jalap. co., ℈j., cras mane, followed by sodæ sulph., ℥iij.; acid. sulph. dil., ♏v.; aq. menth. pip., ℥j. pro haustû; and after bowels have freely acted, to take ol. terebinth., ℥j., mucilage, ℥j., 4^{is} horis.

May 22nd.—Turpentine treatment was commenced at 9 P.M. on 20th, and continued until 7 A.M. on 21st. Resumed again at 4 P.M. on 21st, and continued till 11 P.M. on 21st. Has taken altogether ℥xij. of turpentine up to this time (2 P.M., 22nd). Had three relaxed motions last night, of pale colour, but not without bile. Complains that he has pain in rectum from turpentine unless medicine is taken immediately after food. Purpuric character has disappeared from

eruption on face. No fresh patches have appeared, and there is no marked extension of any previously noted. Swelling noticed on right hand has disappeared, and there is now no discoloration in this situation. Prostration increased ; manner excited ; pulse 136, small, weak, jerking. Spots on palate are less marked than before. Those on back have decidedly faded. Skin moist and perspiring. There are some spots of vesicular eruption near scapulæ ; skin around is neither indurated nor purpuric, and only slightly inflamed. Fine crepitation still heard at left base. Dulness at right base has disappeared. There is now a blowing murmur with first sound of heart, most distinctly at apex. The comparative number of white blood-cells in a drop of blood drawn from finger is decidedly diminished ; but many of them are very granular, and some are seen distinctly disintegrating, and some granular débris is seen in the field corresponding in all essential characters to the granules seen in the cells. This character was again tested with one of Powell and Lealand's $\frac{1}{25} \times 1250$ diameter, and the observation was found to be confirmed. There was no distinct outline to a great number of the white corpuscles, but in others this was very distinctly present, and they were in many cases becoming granular and breaking down. The nuclei appeared to be unaffected by the granular change. Is this a physiological or pathological condition (?). The red corpuscles were entirely unaffected. Urine acid ; no albumen. Not a trace of blood. Sp. gr. 1013.

22nd.—Ordered, brandy ℥vj. in addition to claret ; three eggs.

23rd.—Prostration greatly increased. Great restlessness and jactitation. No more purpuric spots. Dulness and physical signs in lungs unchanged. Brandy, x℥. Died at 3 A.M. on 24th.

For the following table of the temperatures of the patient I am indebted to Mr. B. H. Allen, Physician's Assistant :

	10 A.M.	10 P.M.
17	—	$100\frac{1}{5}$
18	$100\frac{3}{5}$	$100\frac{2}{5}$
19	100	$101\frac{1}{5}$
20	$101\frac{4}{5}$	$102\frac{1}{5}$
21	$101\frac{3}{5}$	—
22	102	$102\frac{2}{5}$
23	$101\frac{4}{5}$	—

Post-mortem twelve hours after death.—Rigor mortis well marked in all the extremities ; purpuric marks in skin somewhat faded, but very like those observed during life.

Body opened.—Amount of subcutaneous fat moderate. There are some small petechial spots on parietal peritoneum and on upper surface of the rectus muscle on right side, but this muscle presents no deviation from the ordinary colour and appearance. On left side there are numerous petechiæ on parietal surface of rectus, and in many spots this muscle presents the following peculiar appearances : Patches of the muscle from one quarter to half an inch in diameter are of a whitish-grey, with none of the usual appearance of muscle, and con-

trasting markedly with the normally coloured tissue around. The portions so affected resemble the muscles of a sole or turbot. They are dry, friable, brittle, and break with a granular fracture. They have also a strong refraction. Such portions of the muscle stain of an intense reddish-brown with iodine—a change which does not ensue in other non-affected parts, though intermediate conditions may be found where the muscular tissue, though not so markedly discoloured, is still paler than natural, and markedly drier, crisper, more friable, and more refracting. These latter portions also stain with iodine much more deeply than natural. These changes have not affected the whole of the muscle continuously, but only in spots and patches scattered irregularly throughout the tissue, and which only form a small proportion of the whole bulk; and to the naked eye the extreme degree of the pallor is only found in a few comparatively small spots. Running through the muscle, and especially near the affected spots, are fine lines of injection, with here and there petechial spots of extravasated blood, but the greater part of the extravasations in the wall of the abdomen are in the subserous cellular tissue, rather than in the substance of the muscles. In the subcutaneous tissue of the front of the thigh, blood is extravasated for nearly half an inch in depth; but the muscles either in the back or front of thigh are but little affected by extravasations, though there is some hæmorrhage in their superficial parts; and here and there in patches, the same characters of alteration may be found in the neighbourhood of hæmorrhagic spots, as have been described in the left rectus abdominis. The great bulk of these muscles, though rather drier than normal, present no other change, and do not discolour with iodine.

The psoas muscles also present some spots similarly affected, and in the neighbourhood of these, minute hæmorrhages have taken place.

Heart presents a large white patch on anterior surface. On the under surface of the sternum is a rough prominence, due to the thickening of the periosteum.

Both auricles contain firm clots in which the fibrin has separated. There are great numbers of white corpuscles embedded in the fibrin, forming in many parts a complete crusta granulosa. Lining membrane and muscular tissue of auricle healthy. Tricuspid and pulmonary valves healthy. Muscular tissue of right ventricle soft, granular-looking; is too pale; breaks down too easily under finger.

Left ventricle: mitral and aortic valves healthy; wall well contracted; muscle here and there mottled as if fatty; throughout it is a great deal too pale, and in some spots colours very intensely of a reddish-brown with iodine; in places it fractures very crisply; but the fibres are brittle, the fracture crackling under the finger, and contrasting strongly with the more pulpy fracture of the right ventricle. These spots are here and there very vascular, as if from small extravasations.

Soft palate and roof of tongue are deeply ulcerated and sloughing. There are three ragged syphilitic ulcers, with sloughing surfaces, in the larynx, on the vocal cords, and on the under surface of the epiglottis.

Right lung free from adhesions. Bronchi present nothing remarkable; tissue loaded with frothy serosity, especially at base, but everywhere crepitant. Left lung firmly adherent to parietal pleura by old adhesions; the whole of the lower lobe is completely consolidated by pneumonic infiltration; cut surface is finely granular, of reddish-grey colour, dryish and friable. Upper lobe is much congested, and loaded with serosity. No tubercle in either lung.

Liver large and heavy; measures $10\frac{1}{2}$ inches in breadth, 9 inches anterio-posterior diameter; $3\frac{1}{2}$ inches greatest thickness in right lobe; weighs 67 ounces. Tissue very firm; does not stain much with iodine; has a friable fracture; is pale, especially in central parts of acini. Gall-bladder empty, contains a small quantity of pale, tenacious, yellow bile.

Kidneys.—Capsules separate with difficulty, splitting into layers and tearing kidney substance. Section finely granular. Cortical substance under capsule rough. Malpighian bodies prominent; tissue firmer than natural; gives no stain with iodine.

Supra-renal capsules very firm, section smooth and glistening, but distinction between cortical and medullary substance well preserved. Tissue of both stain intensely, and far more than ordinary, with iodine.

Spleen much injected; pulp very granular; Malpighian bodies very prominent; tissue very soft and cloudy-looking. It does not stain in the least with iodine.

Pancreas has a fatty look; tissue rather soft, but not otherwise remarkable.

Stomach.—Mucous membrane covered with thick gelatinous mucus, is abnormally pale and more glistening than natural, but does not present lardaceous characters to any marked degree; stains with considerable intensity with iodine.

Duodenum.—Much fatty degeneration of Brunner's glands, which are very prominent; there is considerable hyperæmia, and one small ulceration, quite superficial, seen in mucous membrane. The whole of the tissue stains very intensely with iodine.

Jejunum and Ileum.—Mucous membrane is pale, too transparent, has in dots and spots a waxy look, and the points of the villi stain of an intense reddish-brown with iodine. The waxy look and staining are very marked in the lower half of the ileum. These characters are not found with equal intensity in the large intestine.

Brain and spinal cord carefully examined, present nothing remarkable. In no part, though generally tested, was there found any discoloration with iodine.

Mesenteric glands small, present nothing remarkable, do not stain with iodine. Inguinal glands much indurated; present in some places considerable tracts of firm fibrous degeneration; but in other parts, where gland tissue is preserved, it has a pale look, and colours with iodine with considerable intensity.

Microscopical Examination.—Blood: White corpuscles of clot in heart were found quite normal as a rule, but a few were more granular

than natural. Hardly any traces of their disintegration could be found. The red corpuscles in the clot in the heart were perfectly normal in all respects.

Muscles.—The pale portions above described presented a mixture of two appearances—1. Some fibres were excessively pale, had a uniform waxy look, and had lost nearly all appearance of striation. They broke up very easily, and in many places ruptured within the sarcolemma. Some presented an appearance as if made up of innumerable refracting particles, but I could not succeed in breaking up these fibres, so as to examine separately the constitution of the individual particles. These fibres did not appear particularly enlarged. 2. Other fibres in the same field, which were much paler than natural, had not the glistening waxy look, but were very finely granular. The transverse and longitudinal striation were indistinct, but these fibres in many cases split up very easily into fibrillæ. The granules disappeared for the most part with liq. potassæ or acetic acid, leaving a few scattered fat drops in the field. The nuclei appeared about as distinct as usual in the more waxy specimens. They were indistinct, but not enlarged in those which were granular.

The exceedingly pale spots in the rectus abdominis presented the waxy change in the most marked degree. The changed spots before described in the neighbourhood of the hæmorrhagic extravasations in the thigh, though presenting some waxy fibres, were more generally granular, but in both situations they stained of an intense reddish-brown with iodine, which deepened into an intense red on the application of sulphuric acid : I could not obtain from them a violet tint. The same reddish-brown was produced by Schulze's reagent (chloride of zinc and iodine).

The heart showed in a few parts similar waxy fibres, but in the affected spots the more general appearance was that the fibres were finely granular, with indistinctness of the transverse striation. The granular character disappeared, as a rule, with acids and alkalies. A few fibres here and there were distinctly fatty.

In the vessels of the skin and muscles near the affected parts I was able to trace similar changes.

I endeavoured to inject the right forearm from the brachial artery at the bend of the elbow, using Beale's prussian blue injection fluid, but I found a very great difficulty in injecting the finer vessels of the skin ; in fact, in hardly any portions could these be said to be completely injected, though the fluid returned in great quantities through the collateral circulation into the axillary arteries. As this injecting material ordinarily penetrates with great ease into the finest vessels, I was led to the belief that there must be something in the condition of the vessels themselves which caused this difficulty.

Sections of the skin near, but not in the parts affected with the hæmorrhagic extravasations, gave, either with Schulze's reagent or with iodine, or iodine and sulphuric acid, a most intense reddish-brown, in portions between the fat vesicles corresponding to the course of the capillaries ; this coloration did not pass much into the

papillæ, but was chiefly limited to the situation above described. The colour with Schulze's reagent was somewhat evanescent, but that with iodine lasted for a considerable period of time (forty-eight to seventy-two hours), and in some preparations the marking out of the capillaries was beautifully effected in this manner. It was not constantly met with in all portions of the skin tested, but was best marked in portions taken in close proximity to the affected spots. In some of these parts I succeeded in isolating portions of the capillaries and smaller arteries. I found that they broke up very easily, that some presented a peculiar glistening, waxy look, while others had a more granular appearance, in no respect corresponding to the appearances observed in health.

In some of the small arteries taken from the muscular tissues near affected portions, I found that the middle coat stained most intensely with iodine, the adventitia being unaffected; and I found this change in one or two injected portions. In some places there seemed to be an increase in size and number of the nuclei of the adventitia, but I was not able to satisfy myself of this point in a sufficient number of instances to speak very positively regarding this change. I have tested portions of skin taken from other bodies with the same reagents, and find that they do not present the same appearances. These changes in the vessels of the skin were not general, but occurred in scattered spots and patches, chiefly in the neighbourhood of the extravasation. The vessels of the omentum presented no changes whatever.

Remarks.—It will be observed that the above is not an uncomplicated case of purpura, inasmuch as the syphilitic affection under which the patient was suffering was running at the time of the attack a very acute course, and its local expression (the angina faucium) appeared to be much complicated by the secondary affection. The blood affection here does not appear to have been a very definite one; and it is difficult to associate the increase in the number of white corpuscles with any direct causation of the hæmorrhage. I have already questioned whether the appearance of disintegration observed in some of them be anything but a physiological phenomenon, as it has been long the opinion of many eminent histologists and physiologists that the red corpuscles are only the nuclei of the white.[1] It will be observed that there was no post-mortem evidence of any liquefaction, or increased fluidity of the blood.

The discovery of an appreciable alteration in the *capillaries* in this affection is, I believe, a new fact in its history, though the well-known reaction with iodine of tissues affected by the lardaceous or amyloid degeneration has been observed by Prof. Virchow and by myself, in the rete Malpighi, in a case where there was general lardaceous disease of many of the organs of the body.[2]

[1] See Mr. Wharton Jones On Blood Corpuscles considered in Different Phases of Development in the Animal Series. (Phil. Trans. 1846.)

[2] See a paper by the author, On the Pathology of the Glandular Structures of the Stomach. (Med.-Chir. Trans., vol. xli. p. 388.)

Another very important question, however, here arises as to how far this affection of the capillaries can be logically considered to have been the cause of the hæmorrhage. A direct association of the two changes will probably be considered doubtful by many who know that lardaceous affections of tissues are rarely if ever associated with hæmorrhage, and further, that the change in the parenchyma of organs thus affected, and also in mucous membranes, is often preceded by a similar change in the smaller vessels.[1] The evidence as it stands at present is decidedly against such a theory of causation, unless one or two possible hypotheses may be admitted to explain the connexion of the phenomena observed; but, as far as my own observation goes, these can at present only be stated as queries:—

1. May this lardaceous degeneration, which we know chiefly as a chronic disease, occur occasionally in a more acute form, and in this manner so rapidly alter the elasticity of the vessels, before their diminished calibre can have retarded the flow of blood in the part, that rupture and hæmorrhage ensue?

2. Is it possible that this lardaceous or waxy change, occurring only in *tracts* of tissue, may throw such a stress on the collateral capillary circulation of tissue around, that adjacent but comparatively unaffected capillaries give way?

3. Is it possible that this waxy change in the capillaries may pass, as it often does in other tissues (liver, kidney, muscle), into a softer and more granular condition, which, when affecting the coats of the vessels, may lead to their rupture, in the same manner as it causes that of the voluntary muscles?

These hypotheses receive some support from the observations made in the dissemination of the degeneration in this case, and also from the observations of Zenker on a similar degeneration of the muscles occurring in isolated patches in typhoïd fever.[2]

It will be observed that the description of the muscles which I have given accords very closely with Zenker's, as the objects seen under the microscope did with his beautiful drawings; and therefore, if on no other ground, this case is of interest, as adding another to the list of acute diseases in which similar alterations have been observed, and which Zenker has collected in his valuable monograph.[3] Zenker and Virchow[4] have shown that such changes in muscles are not unfrequently the source of their rupture, and of consequent hæmorrhage. Here there appeared to have been no rupture on any large scale of the muscular fibres, and they were comparatively free from the extensive infiltration of blood occurring in the subcutaneous connective tissue. There appeared in this case to be a tendency to a pretty general affection of the muscular system, though it was only in limited patches that the change was decidedly marked, and I

[1] Virchow, Cell. Path., Chance's translation, p. 374.

[2] Ueber die Veränderungen der Willkurlichen Muskeln in Typhus Abdominalis. Leipzig, 1864.

[3] Zenker has done justice to Mr. Bowman's earlier observations on this condition of the muscles, as found in tetanus, Phil. Trans., 1841.

[4] Verhand. der Phys. Med. Gesellsch. in Wurzburg. 1857.

think it very possible that the same condition may have obtained for the vascular system, though the indications of minor degrees of the alteration were much less noticeable here, where, however, it must be remembered that the difficulties of observation were much greater.

It appears to me that the affection of the muscular fibres of the heart was also one that had supervened acutely—an opinion borne out by the development of apex and basic murmurs while the patient was under observation, and which I should be disposed to attribute to corresponding imperfection in the contraction of the papillary muscles, as no organic alteration of the valves was discoverable post-mortem.[1]

These features of the cases all bear out the hypothesis that the alteration in the vessels had been an acute one, though whether this is sufficient to account for the hæmorrhage, must, I think, remain an open question, until supported by further facts of a similar kind.

I have classed the affection both of the muscles and vessels with the waxy, lardaceous, or amyloid degenerations, both from the naked eye appearances and from the reactions with iodine; and though I consider the latter the least valuable of the criteria by which we judge of this change, it is the only one often applicable for the discrimination of the affection. Its value was, however, very marked in judging of the affected spots in the skin. Simple pallor of the muscles I should not regard as indication of this change; though Zenker is inclined to believe that a peculiar pale appearance observed by Dr. Bennett[2] in the muscles in the neighbourhood of some tumours, indicates a change identical with those which he has described. I have lately observed appearances corresponding with those described by Dr. Bennett in a gluteus maximus tensely stretched over a fibroplastic tumour, which had grown very rapidly in a child from the sacro iliac-synchondrosis. The fibres of the muscles here were extremely pale and indistinct. The normal colour and consistence of the muscle was completely wanting; it did not react with iodine, and instead of being crisp and firm and brittle, it was simply much softened; and though under the microscope the striation, both transverse and longitudinal, and also the nuclei, had almost completely disappeared, there was none of the peculiar waxy refraction which Zenker has described, and which occurred also in the case now under consideration. As far as my observation has extended, I believe the firm but very brittle character of the fibres to be an essential accompaniment of the true lardaceous change in muscle. That the change was of this description is also borne out by a similar affection of the intestines having been observed, the appearance of which corresponded closely, though not existing in as highly marked a degree as in some instances that have come under my observation, with those universally admitted as distinguishing this affection in these structures.

Other questions of considerable interest arise with regard to the

[1] A similar impairment of the functions of the voluntary muscles was also noticed in the weakness and tremulous movements of the extremities during life.

[2] Cancerous and Cancroïd Growths, p. 104.

causation of these alterations by the syphilitic affection under which the patient was suffering. Syphilis is undoubtedly, as shown by Dr. Wilkes, Frerichs, Grainger Stewart, and numerous other observers, a not unfrequent precedent of this degeneration in other organs; but there is very little doubt that it occurs with equal frequency independently of the constitutional state induced by the syphilitic poison, and I can discover no observations in other authors on the mutual relations between syphilis and purpura.[1]

The main causes of purpura have hitherto been sought for in alterations of the blood, but as modern research has largely discredited the theories of hæmorrhage by exhalation (to which the morphological conditions of the blood in this special instance were also opposed), we must, I believe, seek for the causes in alterations of the capillary system; and although the observations on this case leave many questions uncertain, yet I trust that it may serve as an incentive to further research, either for correction or corroboration of the opinions which I have ventured to bring forward. The cessation of the purpuric tendency under the use of turpentine was a very striking feature of this case; but I do not see that it invalidates any theory which may be formed of the causes of the hæmorrhage resulting from an organic alteration of the capillary system. Our science is not yet sufficiently advanced to base any sound reasoning on the juxtaposition of therapeutical and pathological facts, except as subjects for further induction, and the discovery of organic pathological changes by no means excludes the possibility of their cure by therapeutic measures; and I am disposed to regard it as very probable that this patient would have completely recovered, had it not been for the serious complications in his case, both of a constitutional state, and local lesions in the lungs and throat of great severity.

[1] It is interesting to note, in relation to this case, when moderate doses of iodide of potassium had been taken, that a purpuric eruption has been observed to follow the administration of this drug, both by Ricord and by Virchow (Handb. du Spec. Path. et Therap., vol. i. p. 244), and Dr. Walshe informs me that he has seen similar consequences follow immediately the use of bromide of potassium in a previously well-nourished individual, who had never before suffered from any hæmorrhagic tendency, in whom the purpura disappeared on the discontinuance of the drug.

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