of liver extract was given. These injections were repeated two and four days later respectively.

On March 15th the condition of the child showed definite but slight improvement. Teaspoonful doses of liver extract were tried by the mouth, and were retained. Two more injections of spleen and liver were given at two-day intervals, and then the injection of liver extract was stopped, but the injections of spleen were continued at four-day intervals until ten had been given. The dose of the liver extract given by the mouth was gradually increased, until two teaspoonfuls of the liquid extract were being taken three times a day. The child continued to make rapid and uninterrupted progress.

On April 30th she was looking very well, and was up and running about; all physical signs, including all trace of the cardiac murmur, had disappeared. The liver extract by the mouth had been reduced ten days previously to two teaspoonfuls twice a day. A blood count performed on April 30th showed: haemoglobin 88 per cent.; red cells 6,330,000 per c.mm.; leucocytes 16,200; and colour index 0.7. The differential count was: polymorphonuclear neutrophils 56 per cent.; polymorphonuclear eosinophils 1 per cent.; lymphocytes 41 per cent.; and large mononuclears 2 per cent. The films showed nothing else of note, the condition of all the red cells seen being normal.

The child was seen again on June 26th, when she appeared perfectly well; she had returned to school, and played games with a normal amount of energy, no sign of anaemia being present. The dose of liver extract had been reduced to one teaspoonful twice daily, which she is continuing to take.

In conclusion, I wish to express my thanks to Dr. C. P. Lapage of Manchester for his interest and advice, to Dr. Muir of Halifax, and to the pathologists of Halifax Infirmary and St. Mary's Hospital, Manchester.

HAEMORRHAGIC NON-PUSTULAR SMALL-POX.

BY

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The case here reported is one of several which clinically and pathologically portray a picture of haemorrhagic non-pustular small-pox occurring in the colony of Hong-Kong. It is interesting to note that most of these cases occurred in pregnant women during the eighth month of pregnancy, and hence gave us serious thought as regards revision of the diagnosis. After very careful consideration of all the facts we feel, however, that we should still stand by our provisional diagnosis.

History.

The Chinese are very reluctant to give facts relating to their indisposition, and hence we are not able to supply fuller details, although we consider the history very incomplete. The patient stated that she was 22 years old, and that on November 23rd, 1929, she complained of pain in the sacrum of a very severe character; she resorted to the Chinese method of thumping the affected part in an endeavour to get relief, but was not successful. Three days later there was fever, and the movements of an eight months foetus were felt; uterine pain was felt resembling that of commencing labour. The lips rapidly became cracked, and sordes developed on the mucous membrane. An aphthous condition appeared on the gums, and ulcerations here and there on the tongue. Soon afterwards there were rigors and cold sweats, with nausea and vomiting; all these signs and symptoms occurred for the first time within a very short period of each other.

The patient said that her condition was due to "kup sik" (fever after sexual intercourse), which had taken place ten days previously. The Chinese have a superstition that a woman in advanced pregnancy may die if she has sexual intercourse with her husband, and state that the condition is allied to a "severe type of pneumonia." There was no cough in spite of the rapid respiration, and there were no convincing signs of pneumonia.

Condition on Admission.

On November 28th, 1929, she sought admission to the Tung Wah Hospital, stating that her eyes had become very sore on the previous day. She had suffused conjunctivae

and marked lacrymation. The face was flushed, and the body showed a nodular rash, which was not itchy. It was ascertained that the patient was a primipara, and had only been married in the previous July. She had never had swelling of either the face or the feet. She was vaccinated against small-pox in her native village some time ago; how long ago, and whether the vaccination was carried out correctly or not, could not be ascertained, but there was no clinical evidence of vaccination ever having been performed.

Complaint was made of severe aching of the bones, with great discomfort. Not once during her period of pregnancy had she ever left her bedroom. There was no evident history of syphilis. The faeces were yellow and soft in appearance, and since admission the bowels had been open three or four times daily. No blood or mucus was seen. The urine was a little concentrated, and when passed was said to produce a burning sensation. No albumin was found in a catheter specimen, and the specific gravity was normal. For some time there had been weakness of the legs, but no further history or physical signs of note were obtained.

The patient died in the Tung Wah Hospital on November 30th, and was sent to the Victoria public mortuary, where a post-mortem examination was made by one of us on the following morning.

Post-mortem Findings.

The liver was markedly amyloid, and much increased in size. The left kidney pelvis was full of organized blood clot. The bladder contained no urine; there was slight injection of the mucous membrane. The mesentery showed marked numerous petechial haemorrhages. The spleen was congested, but otherwise normal in appearance. In the intestines, including the colon, there were many circular and irregular oval dark-red or blackish haemorrhages of average size (0.5 cm.) remote from the mesenteric margin.

The uterus contained an apparently normal eight months foetus. The stomach showed large oval dark-red haemorrhages, on the greater curvature chiefly. There were also marked petechial haemorrhages on both the pericardium and epicardium, most marked within two inches of the apex. The lungs were only congested, and the larynx and pharynx were injected, without any evidence of diphtheria or other infection. On the gums there were petechial haemorrhages, no blue line, and no dental caries. The brain and meninges were injected, but there was no evidence of cerebro-spinal meningitis or of any other brain or cord condition.

The breasts were well developed, and contained lacteal fluid; in the fatty areolar tissue there were petechial haemorrhages. The joints showed no evidence of haemorrhages, nor of any abnormality. The pupils were dilated, slightly reddened, and beginning to "sink." The blood vessels were thickened. There was a diffuse purplish rash over the whole of the face, neck, trunk, and part of the upper extremities, but it only extended for two inches below the groin, where it could be distinctly seen to end in a fraying-out of petechial haemorrhages, which penetrated into the subcutaneous tissues. At first sight the distribution on the thighs was like that in scarlet fever. In the pancreas was found an abscess 1 inch in diameter, oval in shape, and well encapsulated; no other abnormality was noted.

DIFFERENTIAL DIAGNOSIS.

The following alternative diagnoses were considered: haemorrhagic small-pox (the purpuric non-pustular type of Tidy); purpura haemorrhagica; and purpura fulminans; severe typhoid fever (no typhoid spleen nor Peyer's patches were evident); Henoch's purpura (age usually 5 to 20 years only); lead poisoning (the macroscopic signs were not present, but there was an appearance resembling bilateral foot-drop; mechanical purpura (possibly caused by venous stasis due to pressure of the foetus); acute leukaemia (no glands were enlarged as would be expected); chloroma (skull examined, but no evidence of green marrow); cerebro-spinal meningitis (the pathology was negative); infective endocarditis with secondary septicaemia; certain forms of toxic nephritis of pregnancy (there was a marked conjunctivitis which required other diagnosis for explanation, since the local condition was considered of general origin); and typhus fever. After a very careful consideration of all the signs and symptoms and post-mortem findings, the differential diagnosis was gradually reduced to one of three conditions—namely, haemorrhagic small-pox of the non-pustular variety, typhus fever, and mechanical purpura. Lead poisoning had been eliminated by examination of all the organs by the Government analytical

chemist, Mr. E. R. Dovey, who also assured us that all other poisons were absent, so far as chemical analysis could show.

As regards the rash, those produced by quinine, belladonna, iodides, etc., were carefully eliminated. Typhus fever was not considered in view of the previously mentioned findings—bearing in mind that the rash never appears on the face in typhus, whereas in the present case there was a marked diffuse haemorrhagic rash, and noting that the spleen was not enlarged, leucocytosis was absent, and marked leucopenia was present, with general anaemia.

The total red blood corpuscles numbered about 2,000,000 per c.mm. The white cell count was constantly about: polymorphs 26 per cent., lymphocytes 73 per cent., and mast cells 1 per cent. No eosinophils were seen at any time, and no malarial parasites were detected.

The possibility of mechanical purpura of pregnancy was excluded on the grounds that there was no evidence of circulatory obstruction at all. Neither the uterus nor the foetus showed anything abnormal.

Microscopical sections were made from various parts of every organ, but all that could be noticed was simple haemorrhagic infiltration of the various organs, and nothing more.

Since one of us is now in England, and can deal with any correspondence, we shall be grateful for any criticisms and suggestions which may throw further light upon these cases.

We wish to take this opportunity of thanking the members of the University and Government staff who so kindly regularly assist us in our investigations.

THE BASIC BLOOD PRESSURE IN RAYNAUD'S DISEASE.

BY

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THE basic blood pressure is that pressure exerted on the blood by the contractile walls independently of the additional pressure due to the systolic contraction of the heart. During estimations of the systolic pressure, when the inflated armlet prevents the systolic pressure from being transmitted beyond the point of application, the blood in the vessels beyond the armlet is under a basic pressure which can be estimated by my method described in the *Journal* of February 8th (p. 242).

After examining a large number of apparently healthy men I find that the normal basic blood pressure is about 50 mm. of mercury. When the second sphygmomanometer points to 70 mm. it is evident that the pressure is too high, and that the cells in the blood are being compressed to an extent which handicaps them seriously in their work. Variation of pressure on the blood disturbs the surface tension, osmotic effects, and metabolic reactions of its cells, and a permanently high figure has a serious action on the cellular actions, reactions, and interactions, with a consequently marked effect on the general nourishment of the body. Furthermore, if the pressure is very high the patency of the vasa vasorum is reduced, and the blood supply to the muscular fibres of the arterial walls is hindered to a serious extent. Under such circumstances it follows that these arterial muscular fibres are poorly nourished and their movements become sluggish. This, I suggest, is the state of things in a patient suffering from Raynaud's disease.

In cases of this disease which I have examined the systolic pressure is high, but the basal blood pressure is raised disproportionately, and I think most stress should be laid on the disproportion. In one severe case of a woman, aged 42, the systolic pressure was 200 mm. and the basal blood pressure 100 mm. This patient's nose and hands were badly affected, and her general health was so interfered with that she could not keep herself warm by the exertion involved in routine work.

My findings are increased in value as a result of the good work by Sir Thomas Lewis and Professor William

Kerr, to which reference was made in the *Journal* of July 20th, 1929 (p. 111), and of January 11th, 1930 (p. 82). These observers draw attention to the fact that undue cooling of the hand failed to bring on an attack, because, as they point out, "the minute vessels of the skin of these patients react, as do those of normal skin, to excessive cold by dilating."

I venture to suggest that what really happens is this: in Raynaud's disease the basal blood pressure is high, the blood cell reactions are hampered, and there is a hindrance to the entry of this blood to the vasa vasorum, with the result that the muscle fibres are badly supplied with nourishment and are therefore not able to react satisfactorily to ordinary stimuli. Excessive cold, however, is sufficiently stimulating to make even these sluggish muscular fibres react, and, as Lewis and Kerr state, "the occurrence of a full cyanotic tint is not observed." Their observations, it is interesting to note, have made them come to the same conclusion as I have—that there is an abnormality of the vessel, and also that the closure is not reflex.

I feel inclined to differ from them when they use the term "spasm," which seems to suggest a hypercontractibility of the muscular fibres of the arterial wall. Such a hypercontractibility is not what one would expect to find in a badly nourished muscle, but rather a sluggishness of the movements. As I pointed out in the *Practitioner* of May, 1929; "To suggest that the diseased muscular fibres of the auricle are capable of developing fresh centres of excitation seems contrary to the usual rule of dying matter, whereas on the other hand the diseased fibres forming the thin wall of the auricle lend themselves to be thrown *passively* into a state of tremor." In Raynaud's disease the greater the heat applied within reason, or the higher the temperature of the room, the sooner do the arterial muscular fibres move, with a consequent dilatation, because the general raising of the temperature has helped to reduce the basal blood pressure to such an extent as to allow a freer entrance of blood into the vasa vasorum.

The value of a study of this sort is not so much in connexion with Raynaud's disease itself, since, save for the milder forms, it is a rare complaint, but rather because it helps to emphasize one or two important principles, the first being the importance of a proper blood supply to the muscular fibres of the arterial walls, and, secondly, the blood pressure taken over the arm is not necessarily the pressure on the blood in all parts of the body. The greater liability of the coronary arteries to disease is evidence of the fact that the blood supply of their muscular fibres is often inadequate; as a consequence there is a sluggishness of their movements which gives rise to many of the abnormal contractions of the heart. It is fairly obvious and easily understandable that, owing to the powerful contractions of the heart muscle, the pressure in the coronary arteries must be the highest of all.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

THE SAUERBRUCH-HERRMANNSDORFER-GERSON DIET.

THIS subject is in the forefront of medical interest and discussion in Germany at the present time, and there are many large institutions in which a special kitchen has been provided for the nutrition of patients on these lines. The work of Sauerbruch and Herrmannsdorfer extends over a period of five years; that of Gerson has been still longer. It is advisable to point out that the claims made by Sauerbruch and Herrmannsdorfer refer to the treatment primarily and mainly of surgical tuberculosis—that is, of cases of lupus, and tuberculosis of the skin and bones, as well as of the lungs. Stated shortly, these claims are largely the results of observations made by Herrmannsdorfer as to the influence of diet in the healing of wounds, and of the special value of the salt-free diet, and a diet