Little attention seems to have been given to the effects of cortisone treatment upon the appearance of the vascular lesions in this condition. In the present case both active and old organized foci were found at necropsy. Brunsting *et al.* (1951) stated that there was little alteration in the tissue changes following cortisone treatment. We conclude that by prolonging life it is likely that a greater proportion of organized lesions will be found at necropsy. No changes in the arteries so impressive as those found in polyarteritis nodosa after cortisone treatment by Baggenstoss *et al.* (1951) or after adrenocorticotrophic hormone by Symmers (1953) were to be seen, although the arterial lesions in the two diseases are in many ways alike, particularly when large vessels are affected.

Summary

A case of disseminated lupus erythematosus is described in which gangrene affected both legs in turn.

Widespread, active, necrotizing vascular changes were found and many similar lesions which had undergone organization. Arterial thrombosis had occurred in the legs.

The effects of systemic cortisone treatment upon the vascular changes in this disease are briefly commented upon.

We wish to thank Dr. R. A. Hickling and Dr. B. Fowler for permission to publish this case.

REFERENCES

- Baggenstoss, A. H., Shick, R. M., and Polley, H. F. (1951). *Amer. J. Path.*, 27, 537.
 Brunsting, L. A., Slocomb, C. H., and Didcott, J. W. (1951). *A.M.A. Arch. Derm. Syph.*, 63, 29.
 Dubois, E. L. (1953). *Ann. intern. Med.*, 38, 1265.
 Gold, S. C., and Gowing, N. F. C. (1953). *Quart. J. Med.*, 22, 457.
 Harvey, A. McG., Shulman, L. E., Tumulty, P. A., Conley, C. L., and Schoenrich, E. H. (1954). *Medicine (Baltimore)*, 33, 337.
 Jessar, R. A., Lamont-Havers, R. W., and Ragan, C. (1953). *Ann. intern. Med.*, 38, 717.
 Kaposi, M. K. (1872). *Arch. Derm. Syph. (Wien)*, 4, 36.
 Osler, W. (1895). *Amer. J. med. Sci.*, 110, 629.
 Symmers, W. St. C. (1953). *J. Path. Bact.*, 64, 109.
 Zarafonitis, C. J. D., Grekin, R. H., and Curtis, A. C. (1948). *J. invest. Derm.*, 11, 359.

CHRONIC NEPHRITIS DUE TO INGESTION OF LEAD-CONTAMINATED FLOUR

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An unusually high incidence of chronic nephritis has been noted among the inhabitants of villages situated along the River Kolubara in Serbia. In an effort to find a cause for this my colleagues and I (Danilović *et al.*, 1957a, 1957b) investigated 12 families living in the village of Sopić, which seems to be the worst affected. During the last 15 years 37 members of these 12 families have died from chronic nephritis. Of the 44 members now living, 23 are suffering from nephritis, the 21 healthy members including mostly children and young adults.

The results of bacteriological investigation, including examination of throat swabs, determination of serum antistreptolysin titres, agglutination tests, and urine examination, were negative (Djurisić). The fact that a number of patients gave a history of attacks of lead colic prompted a search for a possible source of lead contamination, and the flour used in the district came under suspicion. This was ground at an ancient water-mill from corn grown by the peasants themselves. Analysis of samples of the flour showed the content

of lead to be five to ten times above the safety margin (Mokranjac). When the grindstones through which the corn passed were examined they were found to contain large quantities of lead; large amounts were also present in the material used for repairing holes in the stones. Further investigation showed four to five times more lead in the flour than in the original corn. No traces of lead were found in samples of the earth in which the corn was grown, in the water, or in the containers used for storage.

Clinical and Laboratory Findings

The clinical picture in the affected cases was characteristic. Patients gave a history of a feeling of lassitude, repeated headaches, vague abdominal pains accompanied by constipation, and pains in muscles and joints. Four patients had suffered from lead colic. The blood pressure was raised in 20 cases. Signs of lead poisoning were seen in the gums in two cases. There was pallor, and in most cases haematological examination revealed a mild hypochromic anaemia with an erythrocyte count of 3-4 millions per c.mm. Two cases had punctate basophilia, the proportion of stippled cells being greater than three per thousand erythrocytes. The leucocyte count was normal. In 19 cases there was azotaemia, with a blood urea of more than 50 mg. per 100 ml. The lead content of the blood was high, amounting to 100-200 µg. per 100 ml. or more, in seven cases. Proteinuria occurred in 16 cases; the urinary content of coproporphyrin was increased in all cases. Changes in the fundus oculi were present in three cases.

Post-mortem Examination

In one case in which death in uraemic coma occurred during the course of the investigation a diagnosis of nephrosclerosis arteriosclerotica saturnina was established at necropsy, the histological picture being that of "nephrosclerovascularis of the type nephrosclerosis arteriosclerotica-nephritis saturnina (Ignjačev)." The liver was found to contain 600 µg. of lead per 100 g. of tissue, and the kidneys and spleen 320 µg. per 100 g.; in the scalp hair there was 4 mg. and in the axillary hair 10 mg. Pb per kg., as compared with a normal content of 0.2-0.6 mg. per kg.

Discussion

Our experience has shown that chronic nephritis following the continuous absorption of small quantities of lead through the alimentary tract is manifested by lassitude, headaches, abdominal pain with constipation, and pains in the muscles and joints. These are accompanied by an increase in arterial tension, a mild hypochromic anaemia, and a slight increase in blood urea (50-100 mg. per 100 ml.). A rise in the blood level of lead and an increased urinary excretion of coproporphyrin also occur and are significant findings. The disease may exist for many years in an apparently mild form, but when the blood urea rises above 100 mg. per 100 ml. the patient's condition becomes serious and death may supervene within a matter of months or at most one or two years. The disease has characteristic anatomic-pathological and histological features, and involves predominantly the cardiovascular system.

Our investigations have been extended to include other villages where the flour ground at the water-mill at Sopić is used. In our view the chronic nephritis here described is of more than local significance, and it is hoped that our continued investigations will throw further light on the pathogenesis and the clinical and anatomic-pathological features of this form of the disease.

Summary

The frequency of chronic nephritis in a Serbian village has led to an investigation of 12 affected families, 37 of whose members have died from the disease in the last 15 years. Of the 44 members now living 23 suffer from

nephritis. The primary cause of the disease was found to be the flour consumed in the district, which is heavily contaminated with lead during milling.

The clinical and laboratory findings, together with the necropsy report in a fatal case, are given.

Further investigations in other villages are being undertaken.

REFERENCES

- Danilović, V., Djurišić, M., Mokranjac, M., Stojimirović, B., Zivoinović, J., and Stojaković, P. (1957a). *Srpski Arhiv.* 10, 1115.
 ——— (1957b). *Presse méd.* In press.

Medical Memorandum

Ergot Poisoning Causing Death in Pregnancy

Search through the literature has not revealed any reported case of ergot poisoning in pregnancy causing death. Undoubtedly ergot is being taken illegally in many cases to procure abortion, and it is therefore the more surprising that such cases have not come under hospital observation.

CASE REPORT

An unmarried girl aged 20 was brought into hospital at 2 a.m. by a young man, who said he thought she was having a miscarriage. The patient, although very restless, was quite rational. She gave a history of some vaginal bleeding about 12 hours previously; her last menstrual period started 4½ months ago (equivalent to a 20-weeks pregnancy). She complained of difficulties with her breathing, which she had experienced for the last few hours, and abdominal pain for about 12 hours. In answer to a direct question she denied having interfered with her pregnancy.

On examination she was very pale, restless, and cold and clammy to touch. The pulse was not palpable at the wrist and the blood pressure could not be recorded. Her breathing was distressed and she had been incontinent of faeces. Her mucous membranes were of good colour. Per abdomen, the uterus was enlarged and the fundal height was equivalent to a pregnancy of 24 weeks. There was no apparent tenderness or other abnormality. Vaginal examination showed no evidence of bleeding, the cervix felt normal, and the os was quite closed. During the vaginal examination the patient was incontinent of faeces and urine. Over both lung fields rales and coarse rhonchi could be heard, and were so loud as mainly to obscure the heart sounds, which were about 100 beats a minute. The jugular venous pressure was not raised.

Just before 2.30 a.m. the patient had a convulsion and died. Attempts at resuscitation were of no avail.

When questioned, some time before the death of the patient, the young man was asked again if he could not give some information relevant to the girl's condition, and said that he thought she had been taking tablets of some sort. The drug ergot was not mentioned until after the girl's death.

POST-MORTEM FINDINGS

Both lungs were extremely congested and oedematous. Small, dark, firm areas were seen under the pleura, which also showed petechial haemorrhages. The heart muscle was flabby, otherwise normal. The stomach contained some vegetable matter and the small intestine some mucus. No evidence of tablets was seen. The uterus was very dark brown in colour and the muscle extremely flabby. The fundus reached to the umbilicus. The foetus was in intact membranes. There was a small clot and haemorrhagic fluid close to the placenta, anteriorly, probably the equivalent of 100 ml. of blood. From the measurements and weight of the foetus the approximate period of gestation was five months. All organs were very congested. There were ecchymoses on the abdominal side of the diaphragm.

Histology.—The uterine muscle was completely necrosed except for a narrow subserous zone of the external layer of fibres about 1 mm. wide, where some muscle fibres had survived. This zone was demarcated from the remainder of the uterine wall by a dense line of infiltration of polymorphonuclear leucocytes. The necrosed tissue showed much haemosiderin. The arteries in this area were also necrosed. No bacteria could be demonstrated by Gram stain. The sections of heart muscle, placenta, lung, kidney, and liver showed congestion only.

Analyst's Report.—Tablets found by the police, as well as stomach content and various organs, were sent for analysis to the Analytical Laboratory in Lewes, and Mr. V. C. Branson, the Deputy Public Analyst, confirmed the tablets to be prepared ergot 2½-gr. (0.16-g.) tablets. The alkaloids of ergot were present in the stomach contents, the amount being equivalent to at least five of the above tablets. Analyses of other organs were consistent with the presence of the alkaloids of ergot, together with decomposition products. Decomposition products made it impossible to estimate with any degree of accuracy the amount of ergot present, but it was of the order of 0.6 mg. in certain tissues.

COMMENT

The relatively small concealed haemorrhage may have produced some shock, but could hardly account for death. The action of some ergot alkaloids is known to produce inhibition of sympathetic nerves and vasodilatation (Dale, 1906). The dihydrogenated alkaloids of the ergotoxine group may produce hypotension, not by peripheral sympathetic blockage, but apparently by central depression of sympathetic vasomotor tone (Peters, 1956).

The histological findings of almost complete necrosis of the uterine muscle and subsequent resorption of toxic substances would add to the picture of sudden shock. All three factors together are therefore most likely to have contributed to the final catastrophe.

The dosage in this case is not known, but may have been large. More essential is the fact that the crude extract was taken, with its many alkaloids. The most disturbing feature of this case was the taking of the drug in a fairly progressed stage of pregnancy, with sequelae probably much graver than would have occurred during the first three months of gestation.

Inquiries of the girl's friend only revealed that the patient had colicky pains in her abdomen for the previous 24 hours, that she had breakfast 14 hours before death (her last meal), that she complained of being cold, and that she had to retire to bed some 12 hours before death. She was dozing in bed most of the time, but was not asleep and was twice sick. She was always rational and talked coherently.

During the inquiry it came to light with what apparent ease the drug can be procured. Midwives can get it without a doctor's prescription for post-partum haemorrhages, and veterinary surgeons often prescribe it for animals.

We wish to thank Miss M. K. Lawlor for permission to publish this case, which was admitted to hospital under her care.

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REFERENCES

- Dale, H. H. (1906). *J. Physiol. (Lond.)*, 34, 163.
 Peters, L. (1956). *A.M.A. Arch. intern. Med.*, 98, 409.

During 1957 over 4,000 became members of the Royal Society of Health. The total membership now exceeds 18,000, the highest figure ever recorded in the 81 years of the society's existence. The society's plans for this year include the building up of a permanent collection of public health exhibits in its new Health Exhibition Centre.