X-ray pictures showed some destruction of the upper roof of the acetabulum and slight destruction of the head. There was considerable atrophy of the femur and ilium.

On December 8, 1927, a strut-graft operation was performed. After the muscles were split, a fairly large abscess was encountered. Guinea pig inoculation of the pus demonstrated the presence of tubercle bacilli.

The postoperative convalescence was uneventful. On February 5 the cast was changed. Immobilization of the hip joint was evident at that time. There was no pain on attempted motion. On April 2, 1927, the cast was removed. There was firm immobilization of the hip joint, no evidence of swelling about it, and no tenderness.

X-ray picture, April 2, showed firm union of the graft. The atrophy of the femur and ilium was much less marked than previously. A short hip spica was applied and the patient was allowed up with crutches.

SUMMARY

1. Hip fusion operations are a well established surgical measure.

2. An extra-articular graft is preferable to an intra-articular or para-articular procedure.

3. The method described is simple. It requires only a single incision.

4. The results have been uniformly successful.

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ADVANCED CANCER TREATED BY COLLOIDAL LEAD

A Report of Nineteen Cases

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After the preliminary reports of Blair Bell in 1922 (1) as to the results obtained in cancer cases with the use of lead given intravenously we were hopeful that a new weapon had been given us to combat the ravages of this disease. At this time we used colloidal lead made from radio-active lead in two far advanced cases without any clinical improvement and for the time being the pursuit of this method was abandoned. Again in 1924 (2) and in 1925 (3, 4, 5) Bell published further papers on the use of colloidal lead in the treatment of cancer. This prompted us again to undertake systematic investigation of the value of colloidal lead in the treatment of far advanced cancer.

After preliminary work on the part of our physicists, Dr. Wilhelm Stenstrom and Melvin C. Reinhard, they succeeded in making an excellent preparation of colloidal lead (6). This preparation was used in mice to gain some knowledge, if possible, of the effects on the mouse carcinoma as well as of the toxicity of this agent. The results of these investigations, which were carried on by Mr. M. C. Marsh, our biologist, were not very encouraging. Nevertheless, it was thought advisable to treat a series of human cases by this method.

In March, 1926, we began the treatment of far advanced cancer with colloidal lead. Nineteen cases were selected as follows: 6 of carcinoma of the breast, 4 of epithelioma of the cervix uteri, 2 of carcinoma of the stomach and one each of carcinoma of the bronchus, epithelioma of the larynx, epithelioma of the lip, nævus cell carcinomatosis, osteosarcoma of the femur, epithelioma of the penis, and adenocarcinoma of the vagina.

In the beginning we used 0.025 grams of lead, which was gradually increased to 0.1 grams, given once a week over a period of 5 to 6 weeks; 1 to 10 injections, intravenously, totalling 12 to 510 cubic centimeters of solution containing 0.102 to 0.646 grams colloidal lead per patient. During the course of treatment on these patients, careful blood counts, urinalyses, and observations were made. It was readily seen that we were dealing with an extremely poisonous substance which caused profound anæmias and asthenias and sometimes death.

Six cases treated showed local reactions which consisted of burning, pain, itching, and swelling in the site of the lesion. The general reactions consisted of chills, nausea, vomiting, expectoration of blood, hæmaturia, weakness, and loss of appetite. Jaundice was noted in three cases during

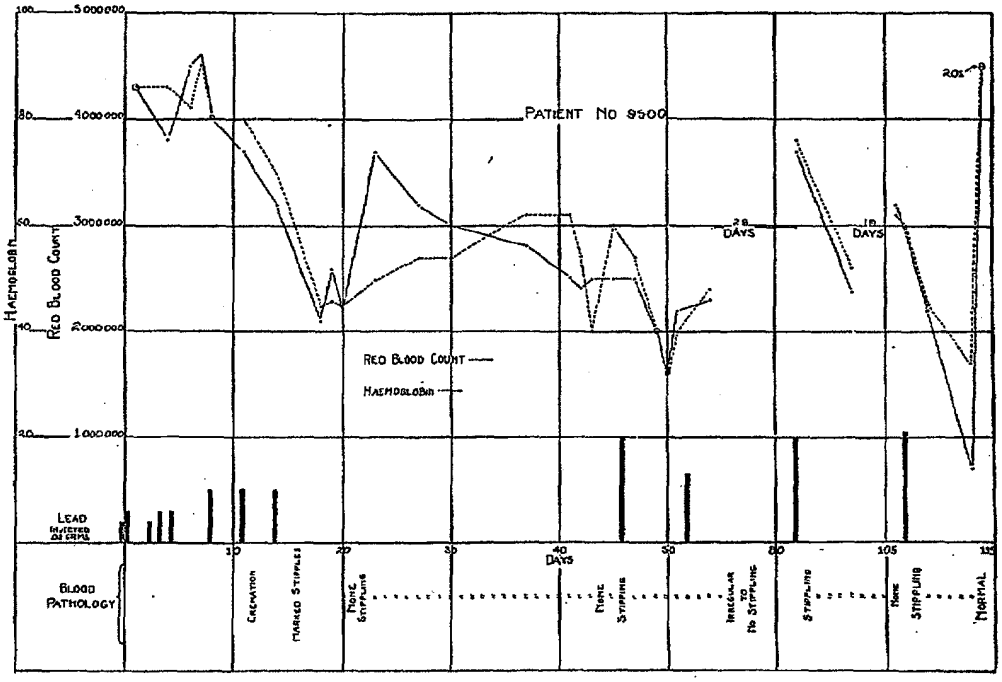

Fig. 1. Blood chart for Case 9500, breast, now alive.

treatment, two of these being carcinoma of the breast and one carcinoma of the stomach. Two, with metastases in the liver, developed an ascites, one being a carcinoma of the breast and the other the nævus cell carcinomatosis. The case of epithelioma of the lip developed encephalitis. All patients at times had varying amounts of albumin and casts present in the urine; two breast cases had suppression of urine, one with convulsions. There were no embolic accidents. The usual colic, constipation, and neuritis of lead poisoning were almost absent. Only one case—the breast case now alive—showed some of these symptoms 2½ months after treatment was started. All patients were stricken with a rapid, grave anæmia after receiving 0.1 grams of colloidal lead, losing 10 to 60 per cent hæmoglobin and as many as 2,500,000 red corpuscles per cubic millimeter within 2 to 5 days, wherein basophilic granules also appeared. Concentrated solutions of lead brought these about much sooner, or in 1 to 3 days. This anæmia, which at times presented a high color index of 1 plus, tended toward spontaneous recovery. Iron citrate and liver diet were of value in combating the anæmia. Injections of 0.05 to 0.1 gram of lead, in a case fairly well recovered from the anæmia, acted very sharply in reducing hæmoglobin and red cells; it looked like an accumulated action.

Blood charts Figures 1, 2, and 3 show the action of colloidal lead in reducing the amount of hæmoglobin and total red count in four of these cases.

Of 6 cases of carcinoma of the breast treated with colloidal lead only one is alive, and she has definite metastases. This case is presented in view of the possibility that the lead in conjunction with high voltage X-ray and chemical amputation of the breast may have prolonged her life. Figure 1 shows the lesion before the lead treatment was started, and Figure 2 shows the same lesion after lead treatment. Figures 3 to 6 show the lesion since the lead treatment was discontinued and after chemical amputation of the left breast and skin grafting was done. The other five breast cases died 2 months, 2½ months, 3 months, 6 months, and 1 year 3 months after lead treatment, was started. All the other cases died—the time indicated being from the beginning of the lead treatment: the 4 patients with epithelioma of the cervix died in 2 weeks, 1 month, 5 weeks and 5½

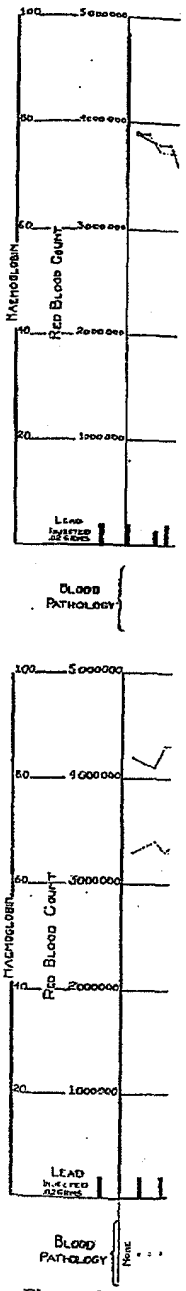

Fig. 3. Case 949

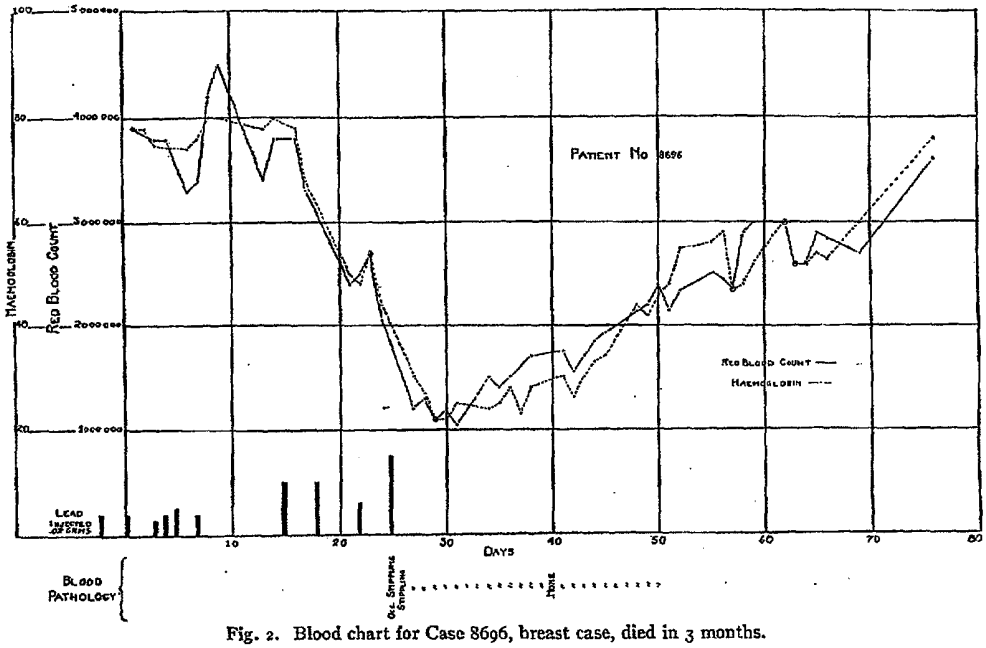

Fig. 2. Blood chart for Case 8696, breast case, died in 3 months.

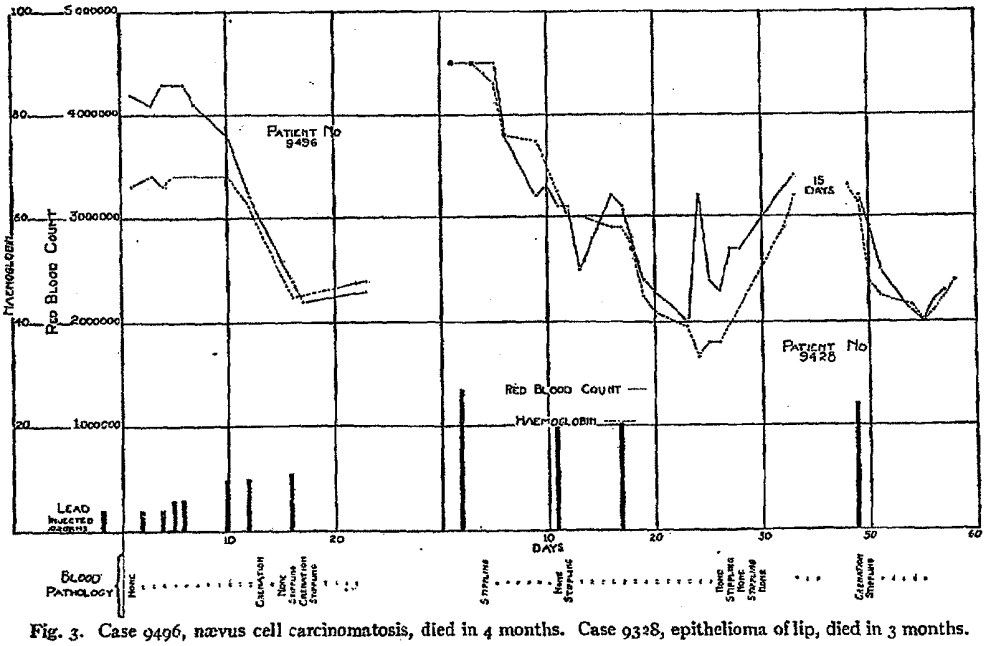

Fig. 3. Case 9496, nævus cell carcinomatosis, died in 4 months. Case 9328, epithelioma of lip, died in 3 months.

Fig. 4. Case 9500, on admittance March 20, 1926. Lead treatment begun.

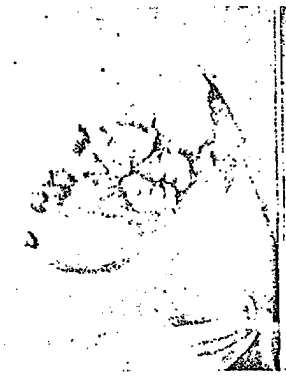

Fig. 5. Case 9500, October 13, 1926, after lead treatment.

Fig. 6. Case 9500, May 16, 1927, high voltage X-ray treatment having been instituted.

Fig. 7. Case 9500, January 19, 1928, when chemical amputation of the breast was begun.

Fig. 8. Case 9500, February 24, 1928, following chemical amputation of breast.

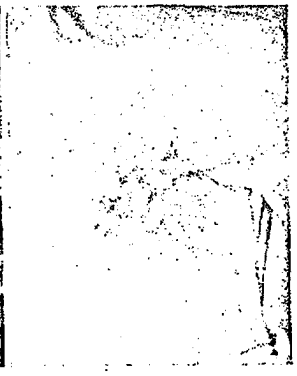

Fig. 9. Case 9500, April 30, 1928, following skin grafting of March 8, 1928.

months; one patient with carcinoma of the stomach died in 8 days, the other in 3 months; the patient with carcinoma of the bronchus committed suicide in 6½ months; the one with epithelioma of the larynx died in 1 month; the one with epithelioma of the lip in 3 months; the one with nævus cell carcinomatosis in 4 months; the one with epithelioma of the penis in 6 months; the one with osteosarcoma of the thigh in 3½ months; and the one with adenocarcinoma of the vagina died in 5 months.

CONCLUSIONS

1. No clinical improvement in the tumor was noted in any case treated in this series.
2. Colloidal lead as used in the treatment of these cases produced a grave anæmia.
3. There was severe hæmaturia observed in at least two cases treated with colloidal lead.
4. In our hands the lack of clinical improvement together with the severe anæmias and asthenias produced by this form of treatment was cause enough for discontinuing the use of colloidal lead in the treatment of far advanced cancer.

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