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Conversion of Osteolytic Carcinoma Metastases to Bone into Osteoblastic Ones by Large Doses of Calcium.

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The administration of calcium in large doses is beneficial in many cases of advanced malignant neoplastic disease. Pain is partially or completely relieved and there is a temporary improvement in the patient's general condition. The use of calcium in such patients rests entirely on an empirical basis, since there is no satisfactory explanation for its temporary beneficial effects. The following case-history is reported because of the influence calcium apparently had on metastatic carcinoma in bone.

Z. P. White female age 44. The patient had a radical mastectomy in 1930 for carcinoma of the right breast. This was followed by 10 deep X-ray treatments to the upper right chest. There were no complaints until the spring of 1932 when severe aching pains developed in the pelvis, thighs and knees. After administration of sedatives this disappeared until the fall. She was seen at the University of Chicago Clinics October 7, 1932, complaining of severe pains as described above, of 3 weeks' duration, necessitating almost continuous rest in bed. Other complaints were sleeplessness due to pain, inappetence, loss of weight and inability to stand or walk.

Examination revealed a middle-aged woman suffering from pain referred to the pelvis, thighs and lower back. Roentgenograms of the pelvis showed extensive osteolytic and osteoblastic metastases in the pelvis and upper femurs. Especially prominent were osteolytic metastases in the pubic bones on each side of the symphysis, a large osteolytic metastasis in the anterior superior spine of the left iliac bone and a large osteoblastic metastasis in the trochanteric region of the left femur.

The patient was given 12 intravenous injections of 5 cc. ten per cent calcium gluconate 3 times a week, and at the same time began taking calcium lactate by mouth, 1 gm. after meals 3 times a day. The dose was increased until she is now taking 3 gm. after meals 3 times a day.

Three weeks later there was considerable improvement. This has continued until the present time. The patient was last seen

April 7, 1933. There was no pain. She walks normally, does her own domestic work and spends several hours a day working outside the home. Her appetite is very good and she has gained 27 pounds since last October. At this date, 6 months after calcium was instituted, the patient having received her regular dose the day before, and blood drawn before breakfast, the blood calcium was 10.5 mg. per 100 cc. Blood phosphorus 4.2 mg. per 100 cc.

Roentgenograms (April 7, 1933) of the pelvis and upper femurs reveal a diffuse sclerosis of the bones. Most of the osteolytic metastases appear now as osteoblastic. The solitary osteoblastic metastasis in the upper left femur has not increased in size. It is impossible to state definitely if the other metastases have changed in size. Roentgenograms of the lungs show no metastases present.

The writer has been unable to find record of an instance of osteolytic metastases spontaneously changing into osteoblastic ones, or vice versa. It is generally held that this does not occur. X-ray therapy may cause sclerosis of an osteolytic carcinoma metastasis, but this must be regarded more in the nature of a healing process than a change in the bone destroying or stimulating properties of the carcinoma cells.

There is no other factor that could have caused the changes in the above patient, except the calcium administered continuously in large doses. The results in this case warrant the administration of calcium in large doses to all patients exhibiting skeletal metastases from carcinoma.

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Local Anesthetic Properties of Some Aliphatic Alcohols

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Macht called attention to the fact that it is not necessary to have complex chemical compound containing nitrogen in its molecule to produce local anesthesia. He showed that the simple aromatic compound, benzyl alcohol, exhibited marked local anesthetic properties when studied by different pharmacological methods.¹ During a

¹ Macht, *J. Pharmacol. and Exp. Therap.*, 1918, **11**, 263.