

## Primary Hypertension: A Disease

*To the Editor.*—Primary (essential) hypertension has been interpreted by some as a specific entity and by others as a quantitative deviation from the norm. As most students of this disorder are aware, single "resting" or casual diastolic blood pressure readings may give erroneous impressions concerning the presence or absence of hypertension. However, tabulating the lowest of five casually recorded diastolic values in a series of 1,000 ambulatory subjects aged 45 to 50 years has disclosed two distinct groups with practically no overlap ( $79 \text{ mm Hg} \pm \text{SD } 6.2$  and  $98 \pm 5.4$ ), suggesting that a fraction of the population has a distinct abnormality.<sup>1</sup>

Utilizing this approach in a large sample of ambulatory adults under 30 years of age, I have observed the onset of persistent hypertension in five instances. Five successive readings of the blood pressure were made in the sitting position and the first as well as the lowest diastolic pressure of the five measurements were recorded. All subjects were examined on at least four occasions over a period of one year. During this period the highest value never exceeded 88 mm Hg and the lowest never exceeded 80 mm Hg. In these five subjects a rise in diastolic pressure, with the lowest of the five successive readings always above 90 mm Hg, appeared within 45 days of the last normotensive reading and persisted at such levels on at least eight subsequent visits over a span of not less than two years. Increases in systolic pressure, for the first time to values greater than 140 mm Hg, occurred simultaneously with the diastolic rise. Prior to the increase all five were found to be free of a history of renal disease, signs of endocrine disorders, prior cardiovascular accidents, fever, anemia, or proteinuria. After the appearance of hypertension, all five were found to have elevated blood pressure readings in the legs and to be free of proteinuria and nitrogen retention.

The fact that a rather abrupt and persistent change in blood pressure pattern can occur in at least some subjects is an added argument that primary hypertension is a disease.

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## Heavy Particle Radiation Treatment of Pituitary Tumors

*To the Editor.*—Recently, criticism of the dangers of heavy particles has appeared (*New Eng J Med*, 282:1434, 1970). It is important for us to clarify the picture because of our long experience in the use of heavy particles in therapy with excellent results.

Readers often equate one form of radiation therapy with another without consideration of the particle used, the dose administered, the rate of delivery, the stereotaxic method employed in the delivery, and, of most importance, the exact dose distribution. A detailed discussion of 13 years experience using the 910-mev  $\alpha$ -particle beam from the 184-inch cyclotron to treat 131 patients with acromegaly has just been published.<sup>1</sup>

All of the patients with acromegaly have been treated with the plateau portion of the  $\alpha$ -particle beam using precise alignment and biplanar rotational techniques<sup>2,3</sup> with the exception of five patients. These five were selected for Bragg-peak therapy because they had very large sellaturcicas. Results show that with relatively low doses, between 4,500 and 7,500 rads delivered in 12 days, successful control of acromegaly can be achieved. The metabolic and clinical results have been excellent. The growth hormone levels in most patients have been reduced to the normal range, and in only ten patients of the entire series is the growth-hormone level greater than 10 ng/ml.

The complication rate is extremely small (3.5% overall) and fortunately, none of the complications was serious. Significant prior irradiation predisposes to an increased incidence of post-heavy-particle therapy complications, and our paper pointed out that three of the six patients who had received x-ray therapy before being treated with heavy particles subsequently developed mild ocular complications. This led to our policy, since 1961, of not accepting such patients for heavy-particle therapy. In addition, we have also eliminated patients who had significant extrasellar extension of the pituitary adenoma. In several instances such suprasellar extensions were found only after carefully conducted tomographic pneumoencephalography, and this procedure is always carried out prior

to treatment, and frequently arteriograms.) With these restrictions, the dosage delivered to the surrounding brain tissue and cranial nerves has been limited to less than 3,500 rads. Of the group of 110 patients so treated since 1961, 105 were treated with the plateau portion of the beam using a biplanar rotational technique; we have experienced no neurological complications in this large group. The other five patients had very large pituitary tumors, and therefore were treated with the Bragg peak. Two of them had a small suprasellar extension, and one of these developed diplopia and subsequently underwent transfrontal surgical decompression with improvement. Of the other three, one developed small bilateral superior-temporal field cuts following treatment which have not progressed; another complained of subjective diplopia following parathyroid surgery, but had no objective extraocular palsies and she is now improving. All five of these patients are working and otherwise well. Our total experience using heavy particles indicates that good control of acromegaly can be achieved by this safe method with a very low incidence of side effects.

The Bragg peak was first used to treat successfully a transplanted tumor in a mouse in 1948,<sup>4</sup> and to treat a soft-tissue tumor in a human patient in 1961.<sup>5</sup> The use of the Bragg peak presents special problems concerning the exact localization of the peak with reference to the area to be irradiated and, with current methods, the Bragg peak must be employed cautiously in cases where there is marked tumor asymmetry or difficulty in discerning the lateral margin of the tumor. Also, problems arise in correcting for air gap and for bone absorption. Once technical difficulties are overcome (and work is underway to develop better methods for localization of the Bragg peak), then we will utilize this method more frequently. The better dosimetry provided by the Bragg peak is a desirable goal for treating pituitary tumors, including the complicated tumors associated with Cushing's disease and Nelson's syndrome<sup>6</sup> where current radiation therapy is unsatisfactory. The Bragg peak with multiaxial rotation will provide the optimum treatment for lesions requiring large doses of radiation and those with vulnerable normal tissue in the vicinity. The physical and

radiobiological properties of the Bragg peak of heavy particles also offer many interesting possibilities in the therapy of neoplasms other than those in the pituitary, largely because of the sparing of normal tissues, the denser ionization with its greater biologic effect, and the decreased enhancement by oxygen.<sup>7</sup>

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## A Rubella Tarantella

*To the Editor.*—Confusion between rubella (German measles) and rubeola (measles) has complicated rubella vaccination programs across the country. A recent study by Darney and Overton (*J Med Assoc Alabama*, 39:537, 1969) showed that 31% of all parents who refused to return a rubella vaccination permission slip in Barber County, Alabama, did not return the slip because they believed that an earlier "measles" vaccine was protective against rubella.

Newspaper headlines frequently read "Measles" when the article refers to rubella. Often, the word "measles" will appear with the word "rubella" in parenthesis next to it, or the word "rubeola" with the words "German measles" set in apposition.

A review of dictionaries demonstrates that this confusion is not confined to the newspaper industry. In many medical dictionaries, "rubella" or "German measles" is given as a second definition for "rubeola."

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