TUMOR OF THE GLOMUS JUGULARE
FOLLOW-UP STUDY TWO YEARS AFTER ROENTGEN THERAPY
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In June 1950 a 35-year-old negro woman was discovered, after some 3 years of symptoms, to have a glomus jugulare tumor involving the left petrous pyramid and presenting through the left ear drum. A report of this case was made previously by Alexander, Beamer and Williams.1 The patient had become almost completely bedridden. A carotid angiogram at that time delineated a large, vascular tumor of the left posterior fossa extending across the midline. Biopsy of the lesion through the external auditory meatus led to the diagnosis of a glomus jugulare tumor. This was considered inoperable at the time.

Subsequently the patient was given roentgen therapy, 2080 roentgen units (in air), through each of two 10 by 10 cm. occipital portals, administered over a 19-day period from July 6 to July 26, 1950. Six weeks later, from Aug. 29 through Sept. 29, 1950, she received, elsewhere, 9000 roentgen units over a right occipital portal.

FOLLOW-UP STUDY

The patient slowly but definitely improved. A graphic presentation of her neurological findings at the time of admission on June 24, 1950, before roentgen therapy, compared with the findings on July 10, 1952, 2 years after roentgen therapy, is shown in Fig. 1.

Briefly on June 24, 1950, before roentgen therapy, the findings were:

Subjective
- Left facial weakness
- Tinnitus and deafness of the left ear
- Severe hiccoughs
- Difficulty in deglutition and phonation
- Ataxia
- Headache

Objective
- An audible bruit over the left mastoid
- An almost complete left facial paralysis of the peripheral type
- Complete deafness of the left ear
- A tumor presenting in the left ear drum
- Deviation of the palate to the right on phonation
- Voice changes indicating a paralysis of her vocal cords
- Paralysis of the left sternocleidomastoid muscle
- Paralysis of the left side of the tongue
- Ataxia of the left arm and hyperactive reflexes on the left side

On July 10, 1952, 2 years after roentgen therapy, the findings were:

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Subjective
No headache
No hiccoughs
Deafness of the left ear
Mild tinnitus of the left ear
No difficulty with deglutition and phonation
No ataxia

Objective
No bruit over the head
A smaller tumor presenting in the ear than before roentgen therapy
Only slight evidence of a residual facial palsy on the left
Deafness of the left ear
No palatal palsy
Normal voice
Paralysis of the left sternocleidomastoid muscle, complete
Paralysis of the left tongue, complete
No ataxia
Normal deep tendon and superficial reflexes

In summary, there has been very marked subjective improvement in headache, ataxia and hiccough. The patient has been able to do her own housework. There has been objective evidence of shrinkage of the intracranial mass and disappearance of the bruit over the left mastoid, almost complete disappearance of the left facial paralysis, disappearance of the 9th and 10th cranial nerve palsy and loss of spasticity of the entire left side of the body.

In addition to the above data, carotid angiography was performed on the last day of her first course of roentgen therapy, July 26, 1950, and again on May 26, 1951, approximately 8 months after her last course of roentgen therapy. Although one cannot draw far-reaching conclusions from the failure of an intracranial mass lesion to fill with diodrast at the time of angiography, there seemed to be less vascularity of the tumor after roentgen therapy and the mass appeared smaller (Fig. 2). Whether this was because of a variation in the films it is impossible to state. The two angiograms were done by the same operator, using the same roentgenographic equipment. The absence of the intracranial bruit at the time of the second procedure is confirmatory evidence of the decreased vascularity of the tumor.

DISCUSSION

Of the reports in the medical literature concerning the effects of roentgen therapy on carotid body-like tumors, only those of Bevan and McCarthy2 and Lahey3 expressed any optimism whatever. In the patient reported by Bevan and McCarthy2 there was striking diminution in the size of the tumor in the neck 15 months after roentgen therapy. In 3 patients described by Lahey,3 definite recession in the size of the tumors in the neck occurred after roentgen therapy. All other reports regarding these tumors have been pessimistic about any benefit that might be received from roentgen therapy.4
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It suffices to say that if a tumor of the glomus jugulare is amenable to surgical removal, this should be done. However, in cases such as the one presented herein, in which there has been obvious central nervous system involvement and invasion of the bone of the base of the skull, the hazard of an attempt at surgical removal is greater than can be justified. The course of patients with tumors of the glomus jugulare is known to be long, sometimes years, before the individual comes to operation, but there has not been evidence of spontaneous recovery without surgery in previous cases. Except for the fact that our patient stated that at one time she had had numbness of the left side of her face and palate which had recovered by the time she was first examined, her course seems to have been steadily in the direction of increasing involvement of the central nervous system until she received roentgen therapy. Since then her course has been one of steady improvement from the neurological point of view.

Previous sporadic attempts at carotid angiography in cases of tumors of the glomus jugulare did not result in satisfactory filling of these tumors with diodrast. Perhaps the fact that the tumor in the present case filled so well and was of a more vascular nature than others, accounts for its apparent sensitivity to radiation therapy. There seem to be no atypical features in the microscopic structure of this tumor that might have led to a prediction as to its radiosensitivity.

There is little doubt, however, that the tumor in this individual did respond to roentgen therapy and in future cases in which surgery is not feasible, a thorough trial of roentgen therapy would be justifiable.

REFERENCES
1. Alexander, E., Jr., Beamer, P. R., and Williams, J. O. Tumor of the glomus jugulare with extension into the middle ear (nonchromaffin paraganglioma or carotid-body-type tumor). J. Neurosurg., 1951, 8: 515–523.