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Foreword

THE TENTH INTERNATIONAL Cancer Congress, held in Houston, Texas, U.S.A., May 22 through May 29, 1970, was attended by 6,018 physicians and scientists from throughout the world. Of these, 1,957 participated in the sessions. The speakers, representing 72 different countries, presented 1,740 papers; abstracts of 1,342 proffered papers appeared in the book of *Abstracts,* copies of which were distributed at the Congress. The remaining 398 papers appear *in toto* in the five volumes comprising this set of Proceedings. These 1,740 papers were virtually all of the papers submitted for presentation; less than a dozen titles were rejected. Consequently, one might reasonably assume that these papers and abstracts comprise a comprehensive survey of the international status of the science and art of oncology as it existed in the spring of 1970.

The papers, speeches, and lectures may be divided into seven general groups:

1. Congress Ceremonies
2. Preliminary Special Sessions of the Congress
3. Main Congress Panels
4. Postgraduate Course Panels
5. Proffered Paper Sessions
6. Rapporteur Reports
7. The Harold Dorn Lecture

The sequence in which these various presentations were made, their authors, and the organization of the Congress may be found in the *Program* of the Tenth International Cancer Congress (Library of Congress Card Catalogue No. 42-43259). The members of the Congress, i.e. those who registered at the meeting, and the names and addresses of most of the persons who presented papers may be found in the *Members* of the Tenth International Cancer Congress (Library of Congress Card Catalogue No. 73-124104). Abstracts of papers presented at the Proffered Paper Sessions (No. 5 in the general groups listed above) are contained in the *Abstracts* of the Tenth International Cancer Congress (Library of Congress Card Catalogue No. 70-12413). All three of these volumes were published by The Medical Arts Publishing Co., 1603 Oakdale St., Houston, Texas, U.S.A. 77004.

The papers published in the 5 volumes comprising the published

proceedings include the Congress Ceremonies (No. 1 in the above list), the Preliminary Special Sessions (No. 2), the Main Congress Panels (No. 3), the Postgraduate Course Panels (No. 4), the Rapporteur Reports (No. 6), and The Harold Dorn Lecture (No. 7). The papers have not been published in the order in which they were given at the Congress, since during the Congress several presentations occurred simultaneously. Rather, in these volumes, the papers, including the Rapporteur Reports and The Harold Dorn Lecture, have been assembled into groups of related subject matter.

Because of the overwhelming number of citations contained in the reference lists submitted by the authors, it was not possible to verify the citations or to complete those submitted in abbreviated form. Therefore, the reference lists have been published in much the same way in which they were received. In the few instances in which no reference list was submitted, or when the list was excessively lengthy, an editorial note has been added, directing the reader to apply directly to the author for a list of the literature cited.—Editors.

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Head and Neck Tumors

The Natural History and Treatment of Nasopharyngeal Carcinoma (NPC)

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THE MOST FREQUENT malignant tumor occurring primarily in the nasopharynx of people of all races is carcinoma; among Chinese, more than 99% of them have been reported as such. With rare exceptions, the carcinomas are either anaplastic or of the epidermoid type with varying degrees of differentiation. The well-differentiated and moderately differentiated ones together constitute less than 3% of the tumors diagnosed in our patients. Electron microscopy has left no doubt that "lymphoepithelioma" is but an undifferentiated variant of epidermoid carcinoma. Contrary to the experience of some workers, we have not found that the histology of biopsy specimens offers any useful guide to prognosis or management.

Clinical Course

The duration of the disease varies widely. Without any form of specific treatment or with only palliative radiotherapy, the patient may live from a few months to over 10 years from the date of diagnosis, but the majority are dead within two years. The longest survival among our patients is 13 years. This patient, an Eurasian man aged 65, first noted a swelling in the upper part of his neck on the right side in 1947. This, an enlarged lymph node, was removed in 1950, and biopsy revealed the presence of poorly differentiated epidermoid carcinoma cells. Although the primary tumor was not discovered, it was suspected to be in the nasopharynx. The patient refused to have radiotherapy, and was apparently asymptomatic until 1956 when he developed right nasal obstruction with

blood-stained discharge. On examination he was found to have a papillary mass protruding from the upper part of his right pharyngeal recess (fossa of Rosenmuller) partially obstructing the right choana and reappearance of an enlarged lymph node at the former site. A biopsy of the papillary mass showed a histologic appearance similar to that of the previous nodal biopsy. He again refused to have radiotherapy. In 1959, he suddenly developed profuse epistaxis and was admitted as an emergency case to another hospital, where he ultimately received an incomplete course of 250-kv x-ray radiotherapy which gave him a tumor dose of 2,000 R over two weeks. Neither the tumor nor the enlarged node subsided after the treatment, but he was well enough to return to his work as a share-broker until 1960, when he died of coronary thrombosis. Throughout, the tumor was confined apparently to the nasopharynx and the right upper cervical node.

Clinically, three types of cases have been observed: metastatic, invasive, and combined.

Metastatic Type

The course of this type is characterized by the appearance of metastases initially in the cervical lymph nodes and later in the distant organs, or the two may appear about the same time, the primary tumor apparently remaining confined to the nasopharynx from beginning to end. In some instances it may remain so small that it produces no symptoms by itself, and the nasopharynx may even appear normal on postnasal mirror examination. However, in the large majority of cases, a tumor could be demonstrated in the nasopharynx by a thorough examination including inspection of the pharyngeal recesses through a Yankauer speculum. It is a good policy not to exclude nasopharyngeal carcinoma until this has been done and biopsies from multiple sites in the nasopharynx have been performed. The nodal swellings usually appear from above downwards, starting from the upper cervix, and may end up with generalized adenopathy. Without biopsy this cannot be distinguished from primary lymphoma. An enlarged node may be found on the opposite side of the primary tumor or, on rare occasions, it may first appear midway down the neck; but one which appears first in the supraclavicular fossa is unlikely to be caused by metastasis from a nasopharyngeal carcinoma. The disease may run a very rapid course, but in the majority of cases the spread may be confined to the cervical nodes for one to three years, and in some for as long as five years or more. Survival without treatment is longest in this type. Distant metastases occur most frequently in the skeleton, especially the spine, with the liver and lungs being second and third in frequency. Although the majority of metastases in bone are of the osteolytic type, osteoblastic metastases are not unusual and may occur occasionally to the entire exclusion of the other type. About one in six patients with intrathoracic metastases develops digital clubbing with or without hypertrophic pulmonary osteoarthropathy. This associated phenomenon could be suppressed by phenylbutazone or indomethacin medi-

cation alone. Epidural or meningeal metastases occur, but metastases in brain have not been found, although the brain is susceptible to invasion by the primary tumor spreading through the base of skull or by adjacent meningeal metastases.

Invasive Type

Here the dominant clinical picture is one of involvement of adjacent muscles and cranial nerves, the fifth and the sixth being the ones most commonly involved initially, the paranasal sinuses, particularly the sphenoid and maxillary, the orbit, and erosion of the overlying base of skull leading to direct invasion of the brain. Cervical nodal metastases are either insignificant or not found even in the terminal stage of the disease, but blood-borne metastases may occur in the absence of cervical nodal metastases in this type, presumably as a result of tumor invasion of the venous sinuses in the base of the skull and dissemination via the perivertebral venous plexus which communicates with the sinuses. Of 48 patients treated in 1965 with a clinical course belonging to this type, four subsequently developed distant metastases, two in the spine and two in the liver. In all four, no enlarged nodes could ever be felt in the neck.

Combined Type

Direct spread of the primary tumor may precede the appearance of nodal metastases or vice versa, or both may occur about the same time. Long intervals up to five years between the two manifestations have been observed in a few cases.

Treatment

The treatment for nasopharyngeal carcinoma is mainly a radiotherapeutic problem. There are four causes of failure: (1) failure to eradicate or control the primary tumor by existing methods of radiotherapy in about one third of the cases, even when the disease appears to be still confined to the nasopharynx; (2) presence of cranial spread with the brain posing a limit to the dose of radiation that could be given without risking fatal or incapacitating radiation neuropathy; (3) distant metastases; and (4) uncontrolled cervical nodal metastases, the least important of the four now that the radiotherapist has at his disposal megavoltage x rays or gamma rays from kilocurie telecobalt units and high energy electrons which have enabled him to deliver a cancericidal dose to the cervical nodes without risking radiation myelopathy.

Radiotherapy Technique: Pathologic and Anatomic Considerations

The primary tumor is frequently like an iceberg. The part beneath the surface is much more extensive than that which appears above, and there is at present no way of accurately determining the extent of the tumor when planning radiotherapy. Ideally, therefore, one should in-

clude all potential sites of spread within the target volume. There is no doubt that many treatment failures have been caused by inadequate coverage of this volume for fear of risking radiation neuropathy, especially in patients without initial evidence of cranial spread. It is believed, however, that if there is ever a chance of a patient's being cured of his disease when cranial spread has occurred, this chance is best when the spread is in its incipient stage. It is also thought that with meticulous attention to technique, the risk of radiation neuropathy could be reduced considerably or even avoided altogether.

The sphenoid sinuses, petro-occipital fissures, posterior parts of the nasal fossae and maxillary sinuses, inferior orbital fissures, petrous bones in front of the inferior openings of the carotid canals, and retrostyloid spaces are so often involved either initially or during recurrence that they should be included in the target volume, even when the disease appears clinically to be confined to the nasopharynx. If all of these

FIG. 1–1.—Film taken by a simulator for defining the lateral fields and also the upper and lower margins of the anterior facial field. Shaded areas are parts to be shielded. The dotted line S indicates the lower margin of the parts shielded by the orbital shields and the line with an arrow is the upper margin of the anterior cervical beam. Dotted line S is formed by joining a point 0.5 cm above the inferior orbital margin and the floor of the pituitary fossa. From this the direction of the axis of the anterior facial beam is obtained. A_1, its upper margin, is at the level of the roof of the nasal fossa and A_2, its lower margin, is at the level of the tip of uvula unless the oropharynx is involved.