ACINIC CELL ADENOCARCINOMA OF THE PAROTID GLAND

REPORT OF TWENTY-SEVEN CASES *

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The purpose of this paper is to record the clinicopathologic features of 27 examples of heretofore rarely encountered or described acinic cell adenocarcinomas of the parotid gland. Twenty-two of these were found among about 900 major salivary gland tumors treated at Memorial Hospital since 1930. Five additional cases submitted from other institutions because of their unusual nature are included.

REVIEW OF LITERATURE

The term adenoma has been employed to designate many tumors of salivary glands. At present we employ it only for the oxyphilic granular cell tumor and papillary cystadenoma lymphomatosum. A brief review of the literature on adenomas will follow; little mention will be made of the oxyphilic granular cell adenoma which has been amply reviewed by Stump,[1] Meza-Chàvez,[2] and others, or of the papillary cystadenoma lymphomatosum recently reviewed by Thompson and Bryant.[3]

In 1892, Nasse[4] described four parotid adenomas composed of cells which resembled the normal acinic cells. Since that time several additional reports of salivary gland adenomas have appeared. However, it is nearly impossible to be certain of the exact nature of many of these tumors; the descriptions or illustrations are difficult to interpret, and authors have disagreed as to the correct designation of several of these lesions. Lecène[5] described a cystic adenoma and cited the writings of Küttner,[6] Ribbert,[7] and Lexer.[8] Lambret and Pélissier[9] described an adenoma which they believed to be of canalicular origin and stated that they thought the cases of Lexer, Ribbert, and Lecène were of similar origin. They stated that Nasse had been the first to report a case of adenoma of the parotid gland and they believed earlier reports of adenomas were actually descriptions of mixed tumors. Lambret and Pélissier stated that adenomas may arise either in the gland (intra-

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glandular type) or outside the gland proper (extraglandular type) and they believed their case to be extraglandular. From the point of view of origin they stated that adenomas may arise either from the acini (the acinic form), such as the fourth case of Nasse, or from the system of excretory tubes (canalicular form), such as their case and the cases of Lexer, Ribbert, and Lecène.

In 1924 Masson[10] described an adenoma that he stated to be of acinic cell origin which clearly resembles some of the cases herein reported. Schutz,[11] in 1926, also reported a case which he stated appeared to be of acinic origin. Hückel[12,13] recorded three adenomas which he believed arose from the glandular epithelium of the parotid gland. Stump[1] has included one of these cases as an onkocytic adenoma in his listing of cases of this type of tumor, but Hückel believed his three tumors to be similar.

Lang[14] gave a short account of salivary gland adenomas and stated that they may be of ductal or glandular epithelial origin. He cited Lambret and Pélissier[9] as having divided adenomas into acinic and canalicular types. Franssen[15] reported a case of a parathyroid-like tumor in the parotid gland which he believed was derived from parotid epithelial cells. Alhbom[16] recorded two adenomas, one of which (case 91) has been accepted as an onkocytic adenoma by Stump.[1] The second (case 59) may represent an acinic cell tumor. Lloyd[17] reported a case of adenoma (case 9), the photomicrograph of which suggests acinic origin. In 1948 Godwin and Colvin[18] reported an adenoma which they believed of acinic origin; this tumor has not recurred after 5 years. Recently Bauer and Bauer[19] reported three cases of parotid adenoma, two of acinic type and the third composed of ducts and acini. Buxton, Maxwell, and French[20] reported several parotid tumors designated as serous cell adenoma and adenocarcinoma which are similar to the cases herein recorded.

Pathologic Findings

Grossly, the acinic tumor may resemble superficially a mixed tumor, but close inspection will reveal a difference. The acinic tumor does not present the moist myxomatous appearance of the mixed tumor. It is encapsulated, round or oval, and on cut surface is lobulated, friable, and generally homogeneously glistening grayish white. Occasionally there may be necrotic foci and cysts. The recurrent lesions may show multiple foci which are similar to those of mixed tumors (Figs. 1 and 2).

Microscopically, the capsule is usually thin and, where contiguous parotid gland is present, usually shows some loss of acini with mild

chronic inflammation. The tumors, though more often solid, may be cystic (Fig. 3), and the cells may have a glandular (Fig. 4) or formless arrangement. The stroma and blood vessels are sparse. Numerous intercellular vacuoles are frequent and suggest secretory material (Fig. 5). The individual granulated cell composing the tumor may be the size of, or much larger than, the normal acinic cell. It contains granules that are histologically and histochemically similar to the granules of normal acinic cells (Figs. 6 and 7); the cytoplasmic granules are basophilic. The cell membranes are distinct and the nuclei uniformly small and dark (Fig. 8). The cells are occasionally clear. In some tumors there are cells which are not granulated and do not resemble acinic cells but appear more closely akin to the cells of the intercalated duct or those at the junction of the acinus and intercalated duct.

No mixed tumor components or areas suggestive of other types of commonly recognized salivary gland tumors have been found, even on serial sectioning of portions of several of these tumors. Mucicarmine stains of several lesions have been negative, which effectively removes them from the muco-epidermoid group of tumors. An occasional tumor contains a prominent lymphoid stroma (Fig. 9) or foci of calcification. Fat stains have revealed only fine droplets which are occasionally intracellular but generally intercellular. Glycogen staining was positive in a few areas in two cases. Periodic acid-Schiff's staining is positive in normal parotid acinic cells and many of the granulated cells of the tumors gave positive results by this method; a histochemical similarity is demonstrated thereby (Fig. 10). Where material is present in the intercellular spaces it stains positively with the periodic acid-Schiff procedure.

Metastasis to lymph nodes was found in one (case 3) of several cases in which specimens from neck dissection were studied; the deposits were found in two contiguous lymph nodes. Metastasis to distant organs has occurred in several cases, although, based on histologic appearance alone, this trait would not have been expected. An example of the rather innocuous appearance of a pulmonary metastasis is shown in Figure 11.

It is our belief, based on histologic resemblance, absence of other recognizable tumor types in multiple sections, foci of apparent serous secretions, and the similarity of the results of periodic acid-Schiff's staining in normal and in cancerous cells, that these tumors arise from the acinic cells.

Clinical Observations

Clinical observations upon the 27 cases are summarized in Table I. Clinically, the lesion closely simulates a mixed tumor. All of these

TABLE I

Clinical Data for Twenty-seven Cases of Acinic Cell Adenocarcinoma of the Parotid Gland

Case*	Age at onset	Age on admission	Sex	Parotid gland	Interval before treatment	Previously treated	Treatment	Tumor size in cm.	Recurrence	Follow-up	Metastasis
1. A.K.	17	21	M	Left	3 yrs.	Yes	Excision, radon	2 x 1.2 x 1	No	NEN‡ after 9 yrs.	No
2. M.S.	45	57	F	Right	1 yr.	Yes	Excision, radiation		Several	Died after 24 yrs., NEN?	No
3. O.W.	28	48	F	Right	16 yrs.	Yes	Radiation, excision, neck dissection†		Several	DON§ after 8 yrs.	Lung, subcutaneous and regional nodes
4. E.H.	54	57	F	Right	3 yrs.	No	Excision, radiation	4 x 2.5 x 3	No	NEN after 13 yrs.	No
5. G.E.	68	68	F	Right	6 mos.	Yes	Excision	2.2	No	NEN after 7 yrs.	No
6. B.M.	56	56	M	Right	4 mos.	No	Excision	3.5 x 2 x 0.7		No	No
7. A.L.	53	53	F	Left	5 mos.	No	Excision	2 x 1.5 x 2	No	NEN after 1 yr.	No
8. H.B.	53	53	F	Right	6 mos.	Yes	Excision, neck dissection	3 x 3 x 1.5	Several	LWN‖ after 3 yrs.	Lung
9. P.H.	51	56	M	Left	Few weeks	Yes	Radical parotidectomy	6.5 x 4.5 x 4	Several	NEN after 3 yrs.	No
10. G.S.	30	34	F	Right		Yes	Radical excision, neck dissection	3.5 x 2	Several	Local recurrence	No
11. V.H.	23	46	F	Left		Yes	Excision, neck dissection		Several	NEN after 30 yrs.	No
12. F.G.	25	28	F	Right	2–3 yrs.	No	Excision	2.5 x 2 x 1.5	No	NEN after 2 yrs.	No
13. C.B.	62	66	M	Left	4 yrs.	No	Excision, neck dissection	2.5	Yes	DON after 1.5 yrs.	Lung and bone
14. A.D.	55	62	F	Left		Yes	Excision	2.0	Several	Recurrence	No
15. J.T.	55	61	M	Left	6 yrs.	Yes	Excision	2.5 x 2 x 2	One	Too recent	No
16. F.G.	43	50	F	Right	4 yrs.	Yes	Excision, neck dissection	2.2	Yes	NEN after 8 yrs.	No
17. E.L.	31	50	F	Left	15 yrs.	Yes	Excision, neck dissection		No	NEN after 2 yrs.	No
18. R.R.	20	28	M	Left	8 yrs.	No	Excision	2.5	No	Too recent	No
19. E.G.	60	64	F	Right	4 yrs.	Yes	Excision, radon		One	NEN after 12 yrs.	No
20. H.S.	33	48	M	Left	6 yrs.	Yes	Excision		Several	NEN after 20 yrs.	No
21. A.S.	18	22	F	Right	4 yrs.	No	Excision, radon	2.0	Yes	NEN after 15 yrs.	No
22. G.A.	46	46	F	Right	8 mos.	No	Excision	1.0	No	Too recent	No
23. F.G.		42	F								
24. F.H.	40	42	M	Left	2 yrs.			1.5	Yes	DON	
25. N.N.	64	64	F		2 mos.		Excision		No	Died of pulmonary embolism after 2 mos.	No
26. A.S.		26	M						Yes		
27. P.P.	43	58	M	Left					Yes	Pulmonary metastasis excised	Lung

* Cases 1 to 22 are from the files of Memorial Hospital, New York City; cases 23 to 27 were treated elsewhere and slides submitted to Memorial Hospital.
† Removal of the sternomastoid and omohyoid muscles and submaxillary gland, internal jugular vein, and associated lymph nodes.
‡ NEN = No evidence of neoplasm. § DON = Died of neoplasm. ‖ LWN = Living with neoplasm.

tumors thus far recognized have arisen in the parotid glands; however, occurrence in other salivary glands is to be expected.

The time elapsing between discovery of the tumor by the patient and definitive medical care varied from a few weeks to 16 years. Seventeen of the 27 patients were women. The age range at the date of onset of symptoms was 17 to 68 years. Recurrence was encountered in about 50 per cent of the patients. Many of these patients had had several recurrent lesions at various intervals over long periods.

Five of the patients are dead. One died without apparent residual neoplasm, three died of the neoplasm, and one died of pulmonary embolism 2 months following operation. Three patients are living with the neoplasm and for three the status is indeterminate. Metastasis occurred in two of those dying of the disease. Pulmonary metastases have been found in two of the three patients living with the neoplasm. The facial nerve was not impaired prior to initial treatment but has been impaired in patients suffering recurrence.

Treatment

Treatment has been largely surgical. It appears that an excision of the tumor with a margin of parotid gland (subtotal parotidectomy), performed with care not to rupture the capsule, constitutes the best method of treatment. Because of the infrequency of lymph node involvement in the material studied thus far, neck dissection does not appear to be indicated.

Summary

The clinicopathologic features of 27 cases of acinic cell adenocarcinoma of the parotid gland have been recorded.

These tumors occurred slightly more commonly in females, and most frequently in the fourth and sixth decades. Clinically, they simulated mixed tumors and generally had a long course with frequent recurrences. Metastases to lymph nodes were encountered in one instance and to other organs in four cases. These occurred in instances in which the histologic pattern of the primary lesion would not lead one to expect such a course. Treatment of the primary tumor appears to be excision with a good margin and an intact capsule.

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LEGENDS FOR FIGURES

FIG. 1. Gross photograph of a recurrent acinic cell tumor of the parotid gland demonstrating lobulations. × 5.

FIG. 2. Recurrent acinic cell tumor showing lobulations with intervening fibrous stroma. Hematoxylin and eosin stain. × 7½.

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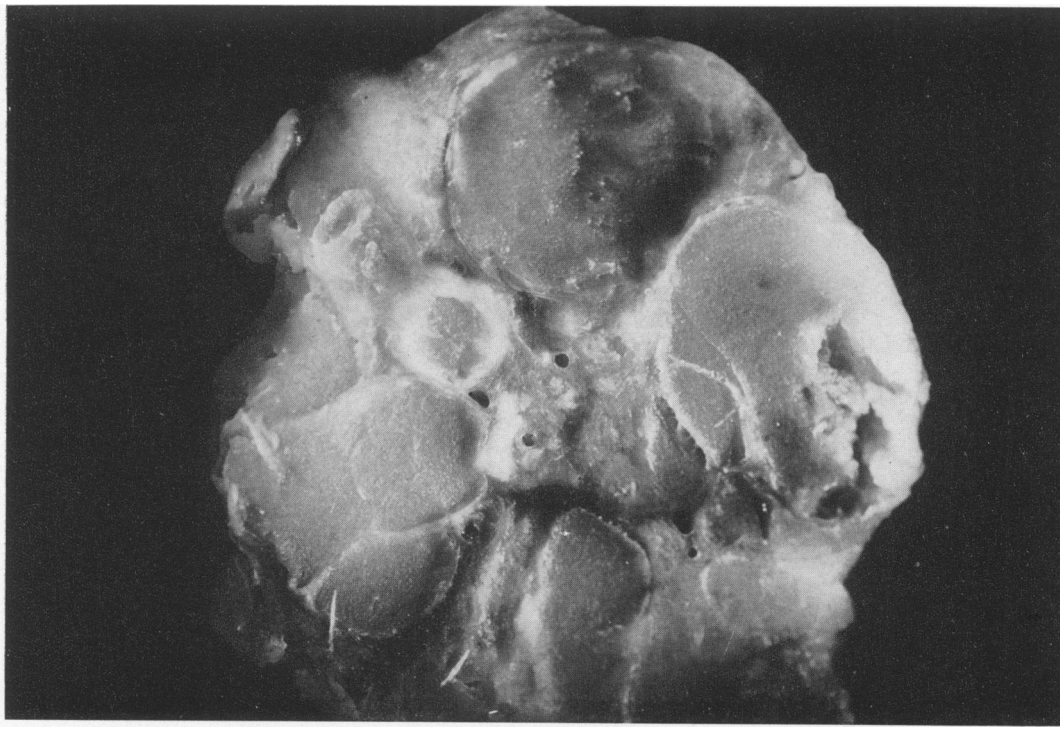

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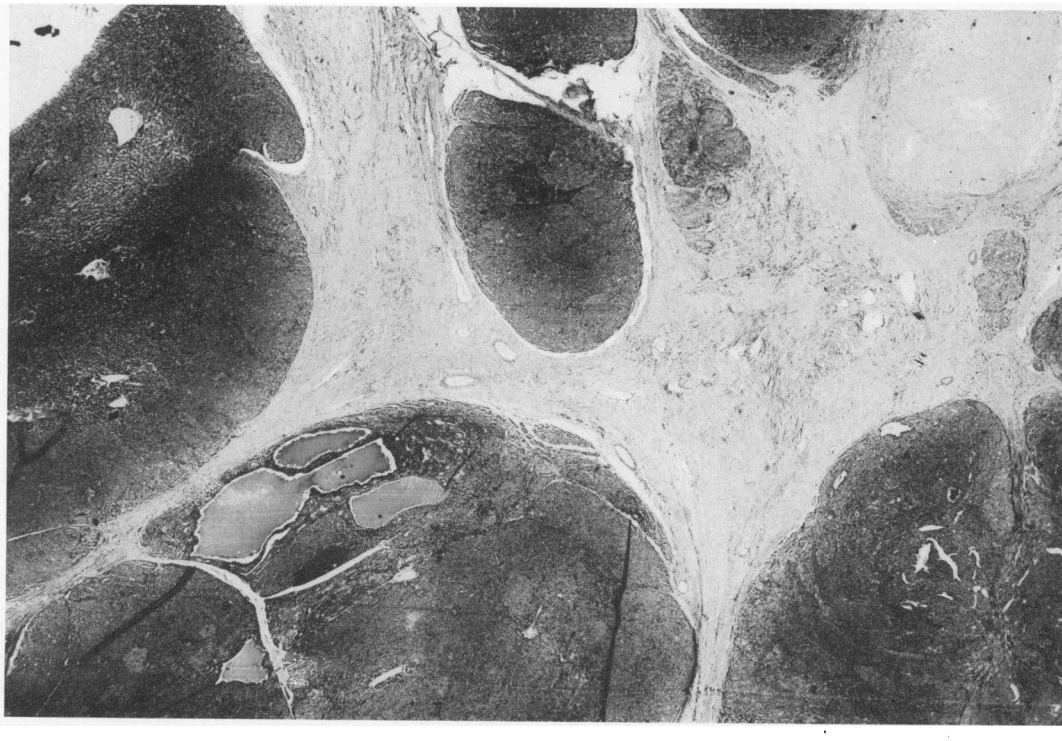
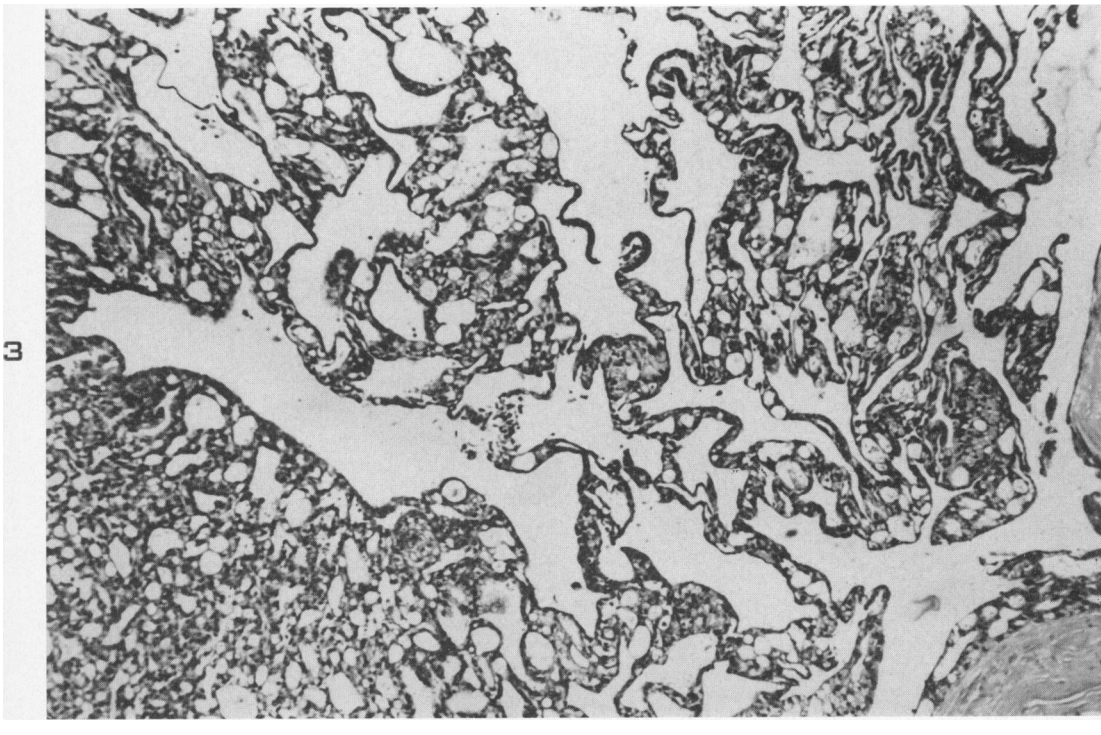
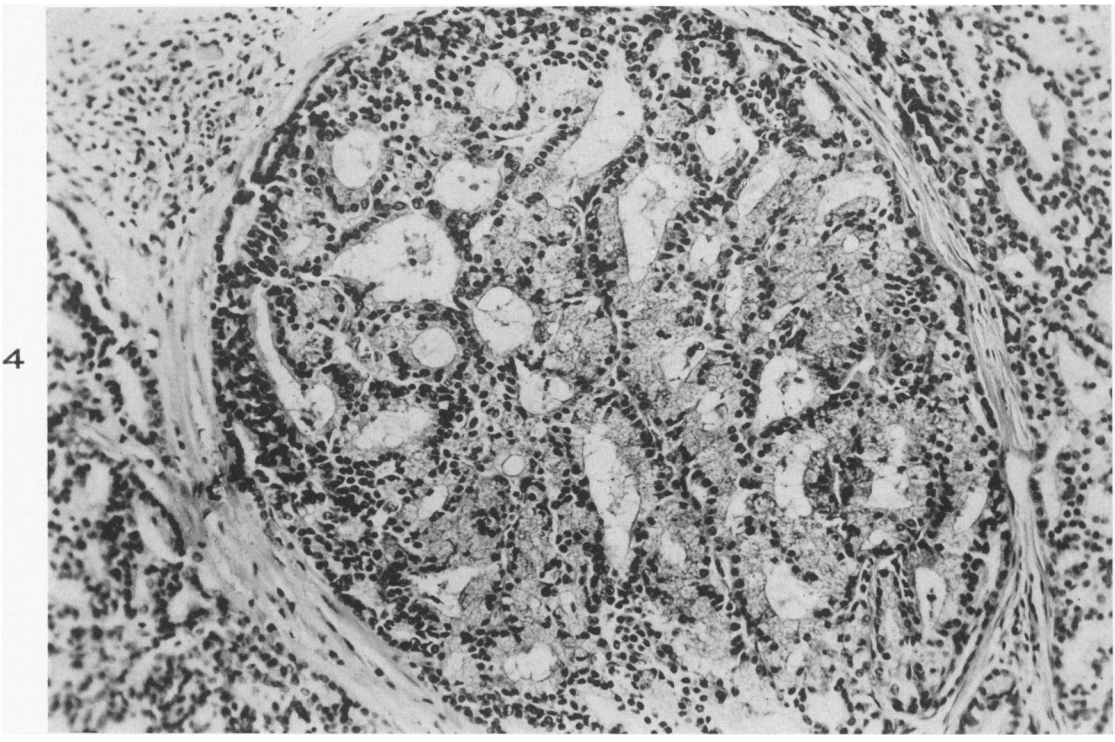


FIG. 3. Section of a papillary cystic pattern infrequently encountered. A higher magnification of this section revealed good cytoplasmic granularity. Hematoxylin and eosin stain. × 50.

FIG. 4. Section showing a more glandular pattern and resembling the lesion reported by Masson[10] in 1924. Hematoxylin and eosin stain. × 195.

FIG. 5. Section demonstrating little granularity of cytoplasm and prominent intercellular vacuolization. Hematoxylin and eosin stain. × 195.





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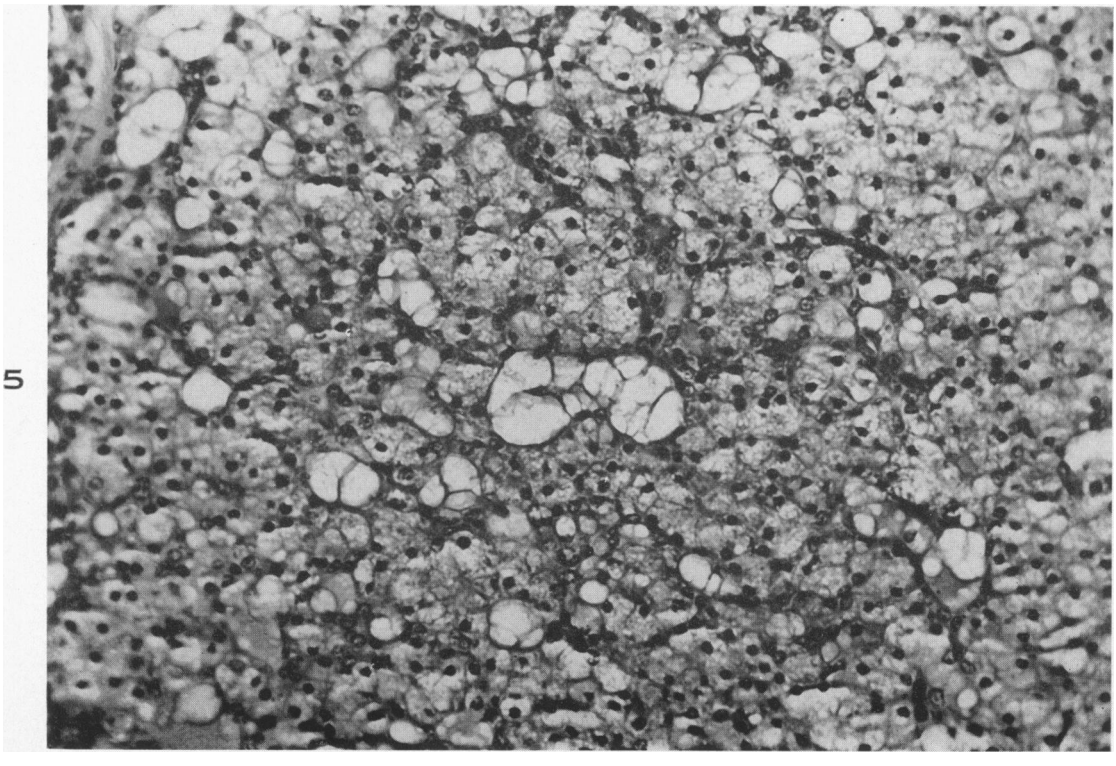

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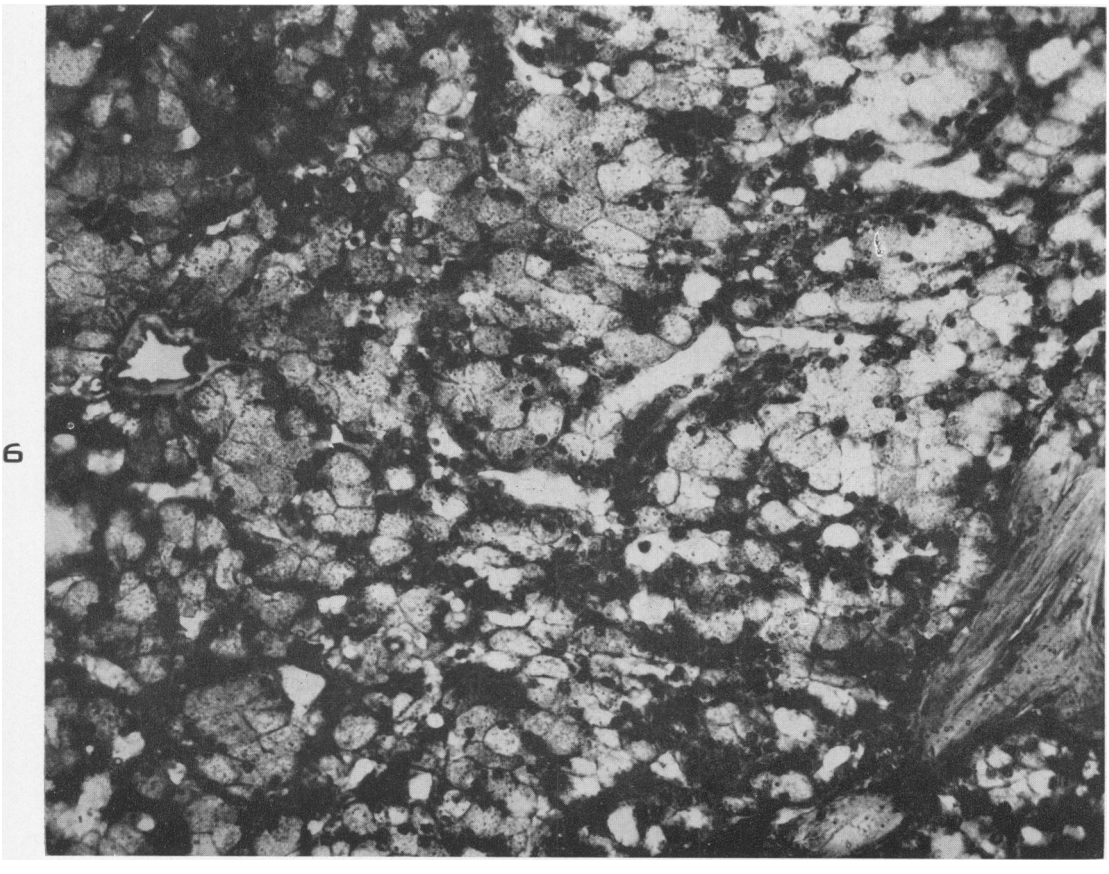
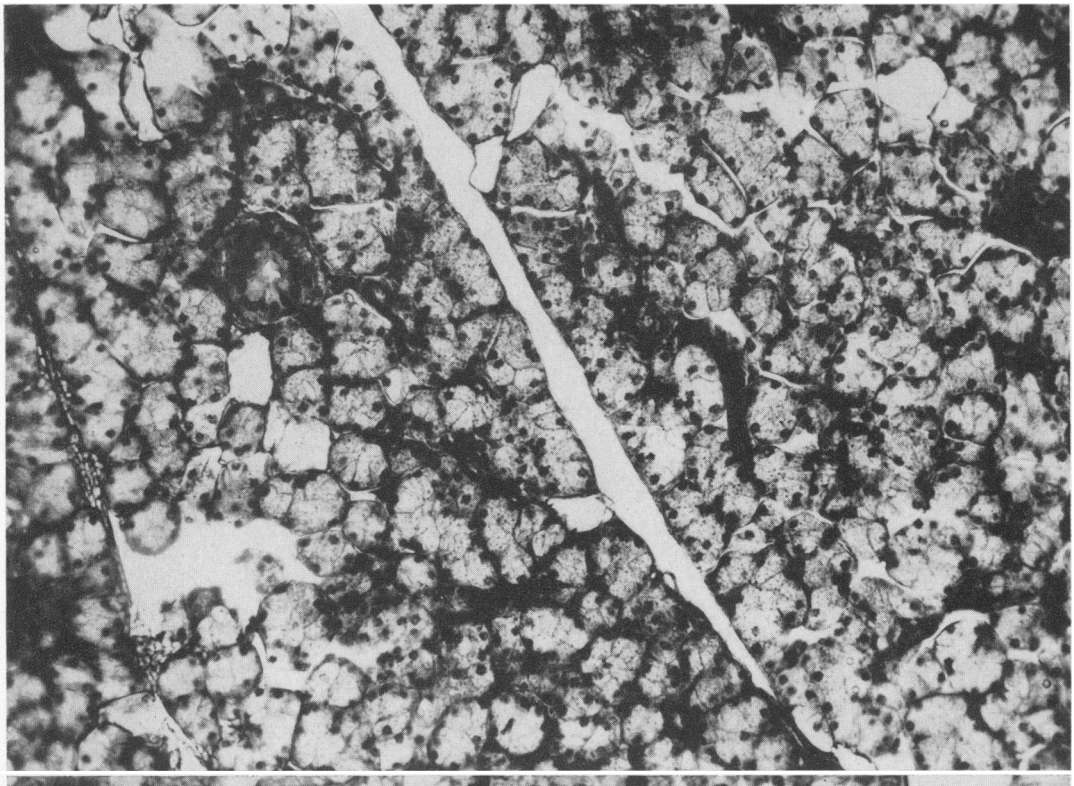
FIG. 6. Photograph of frozen section of tumor stained with polychrome methylene blue. For comparison with normal parotid gland in Figure 7. × 210.

FIG. 7. Photograph of frozen section of normal parotid gland stained with polychrome methylene blue. For comparison with Figure 6 from an acinic cell tumor similarly stained. × 195.

FIG. 8. Intracellular granules and intercellular spaces in an acinic cell neoplasm. Hematoxylin and eosin stain. × 435.





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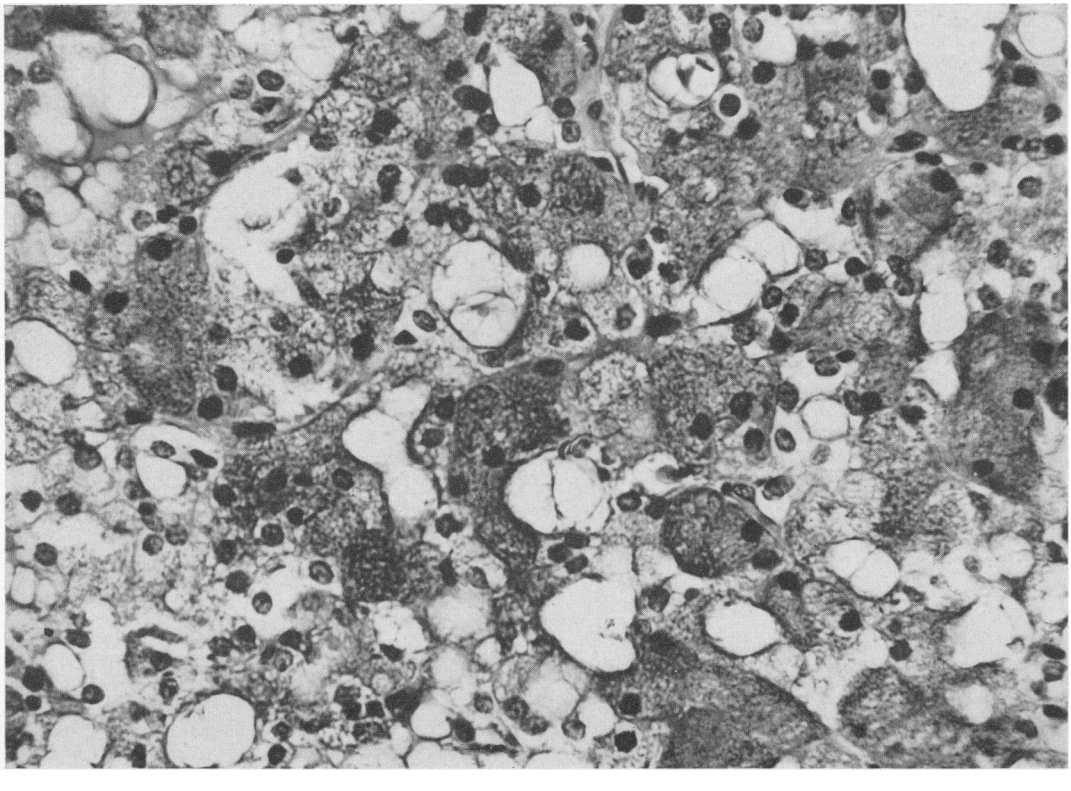

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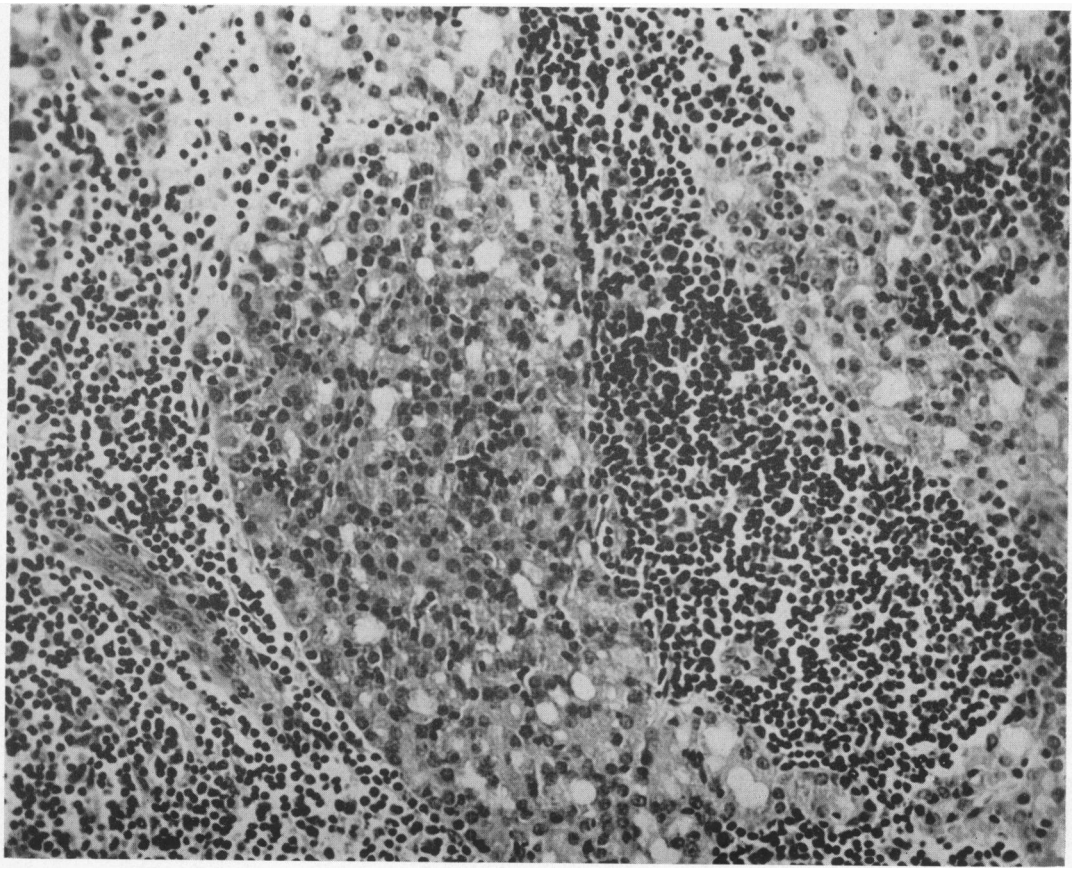
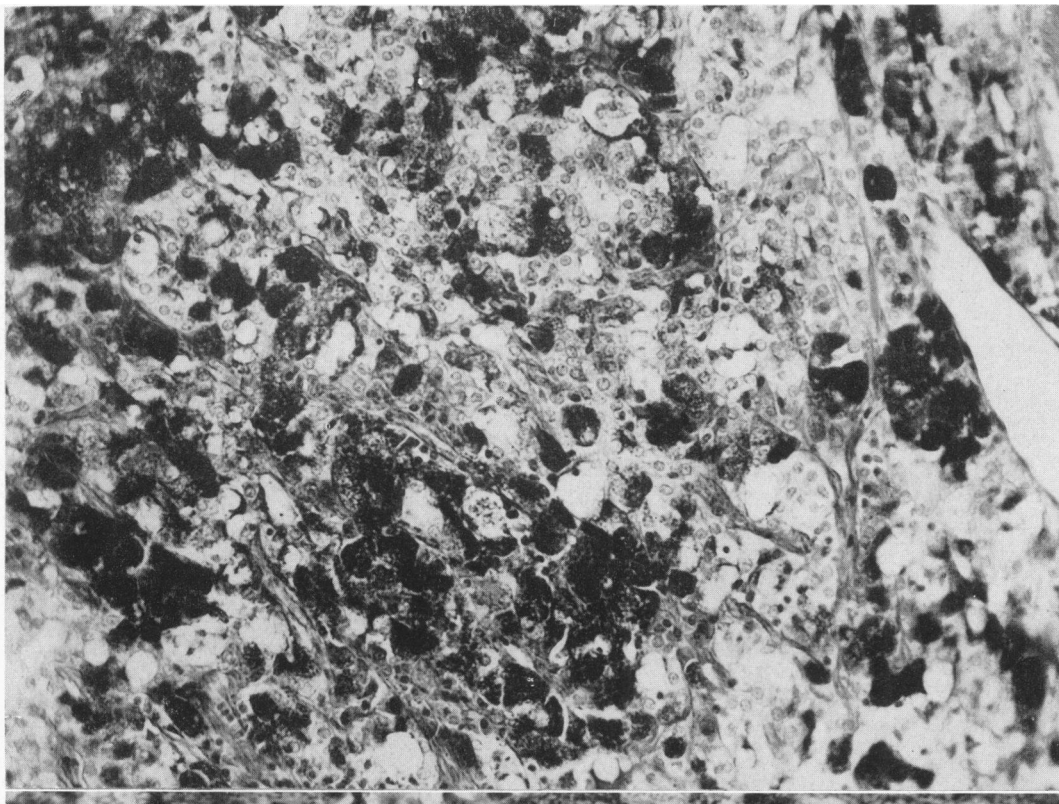
FIG. 9. Neoplasm with lymphoid stroma. Hematoxylin and eosin stain. × 465.

FIG. 10. Periodic acid-Schiff's stain demonstrating positive-staining cells with intracellular granules, and intervening negatively stained cells. The normal parotid acinic cell also gives a positive stain. × 210.

FIG. 11. Section of a pulmonary metastasis from case 27. A local recurrence showed similar granules. Hematoxylin and eosin stain. × 465.





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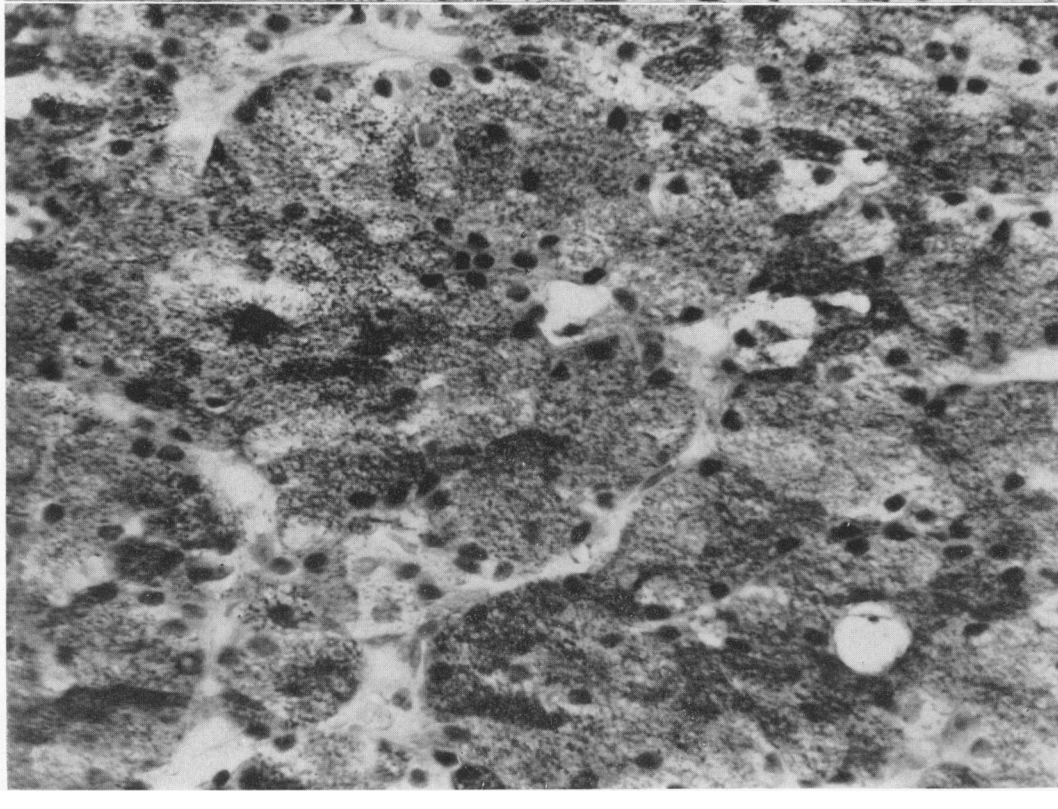

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