Multiple Primary Malignant Tumors and Susceptibility to Cancer


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Experimental genetics has given us much information as to the part heredity and individual susceptibility play in the development of tumors in different strains of animals. Data from human material are less readily obtained and most of our knowledge has been based on reasoning by analogy from findings in animals, or on studies on the incidence of tumors, especially with regard to the occurrence of multiple malignant tumors, in given samples of a population. As time passes the accumulation of this type of data, in itself of individual and perhaps minor importance, may become significant from the point of view of human genetics.

The first thorough study of multiple primary malignant tumors was that of Warren and Gates (19), who concluded that the incidence was greater than could be explained on the basis of chance. Their statistical work was based on a group of 1,078 cancer autopsies, during which 40 (3.7 per cent) examples of primary malignant growths were found. In addition these authors analyzed cases collected from the literature, which together with their own totaled 1,259. The incidence of multiple malignant growths on the basis of European and American data was 1.8 per cent; on the basis of American data, it was 3.9 per cent.

A review of some of the more notable reports on the subject during the past ten years shows the interest it has aroused and may suggest new approaches.

In 1934 Bugher (2) presented 30 cases of multiple malignant neoplasms among 983 cases of cancer autopsied at the University of Michigan Hospital from 1896 to 1932, an incidence of 3.1 per cent. Also, he analyzed the data of Warren and Gates (19), using different statistical methods, and obtained results in agreement with theirs. He concluded that the actual incidence of multiple cancers exceeds that expected on the basis of chance alone, and that there is an inherent susceptibility to cancer possessed by a portion of the population.

A somewhat smaller series than Bugher’s, but perhaps more significant because of better histories as a result of the increased interest in cancer in recent years, was presented by Burke (3) from the University of Wisconsin Hospital, covering the period from 1924 to 1935. In 583 cancer autopsies, he found 46 (7.8 per cent) multiple cancers. In a series of 685 cancer autopsies at the Presbyterian Hospital, New York City, Hellendall (8) found 30 cases (4.3 per cent) of multiple malignant tumors.

Three other series recently reported gave rather lower figures than these. Austin (1), at Cincinnati, found an incidence of 2.7 per cent among 887 cancer autopsies; Kirshbaum and Shively (10), at Cook County Hospital, found 1.2 per cent among 1,411; and Tullis (18), at Bellevue Hospital, found 2 per cent among 1,044 autopsies on persons with cancer. The two latter lower figures may be explained, perhaps, by less detailed case histories, so that cases of metachronous cancers were not readily recognized.

An even richer source of information might be found in surgical material, were it not for the difficulty in obtaining accurate historical data. The importance of a sufficiently long follow-up in a series of multiple malignant neoplasms based on surgical material is brought out by Regaud’s (15) findings with two groups of cases of carcinoma of the cervix. In one group of 1,009 cases that were followed for a short period he found only 9 multiple malignant growths (0.9 per cent), whereas in 284 that had been followed for 5 to 6 years there were 6 cases (2.1 per cent). Hurt and Broders (9) reported 71 cases of multiple malignant growths among 2,124 cases of cancer treated at the Mayo Clinic in 1929. These authors felt that the incidence, 3.3 per cent, may be low, since their cases were followed only 2 years after treatment of the primary tumor. Later, Stalker, Phillips, and Pember-
ton (17) presented 2,500 cases with proved cancer, operated upon at the Mayo Clinic in 1937. Of these, 113, or 4.5 per cent, were cases of multiple malignant neoplasms (51 synchronous and 62 metachronous). They included 17 cases of bilateral lesions of breasts or ovaries.

From 1913 to 1933, among 11,212 cases of malignant neoplastic disease studied at the New York State Cancer Institute, 307 cases (2.7 per cent) of multiple cancers were encountered (16).

Gaudin (6) carried out a careful survey of 4,610 cancer patients in New Zealand covering a 40 year period; all but 71 were traced. Among them were 256 cases (5.5 per cent) of multiple malignant tumors. In the Li6ge, Belgium, Cancer Clinic, 3,115 cases of cancer were studied between 1925 and 1935. Only those multiple cases involving different systems were reported, thus reducing the number to 36, or 1.2 per cent (5). Hartmann (7) presented his personal experience of about 3,000 cancer patients, of whom 25 were histologically proved to have multiple cancers.

Most of these authors found a relatively high incidence of multiple malignant growths, and all attributed them to a susceptibility or predisposition to cancer. Peller (13), however, presented statistical material to maintain a contention that he had previously presented, to wit: that a cured cancer secured protection against the appearance of another cancer. In support of this hypothesis he presented 5,876 cancer cases collected from several institutions. Among these there were 270 cases (4.6 per cent) of multiple malignant tumors. However, he based his statistical studies on the cases of metachronous multiple malignant neoplasms, that is, on only 40 out of the 270 cases. In each case, one of the cancers was on the skin. He concluded that the real rate for multiple malignant growths was less than the expected rate. It is obvious that the determination of whether two or more tumors have occurred simultaneously or metachronously is difficult and subject to error, even with careful histories and autopsy material. Warren and Gates (20), and more recently Lombard and Warren (11), have analyzed these and other statistics and pointed out a probable fallacy in Peller's conception of cancer protection. Furthermore, Warren and Gates (20), in their study of 1,149 cases of skin cancer, found that the cancer attack rate of organs other than the skin was twice that of the expected rate.

The importance of cutaneous carcinoma in multiplicity has been shown by many writers. Phillips (14), working in the American Southwest, studied a group of about 1,400 cases of skin cancer, of which 226, or 16 per cent, were multiple, ranging from 2 to 23 per patient. The majority, though not all, of the multiple lesions were primary. In discussing Phillips' paper, Cooper (4) stated that 1,790 cases of cutaneous cancer were seen at the Barnard Free Skin and Cancer Hospital between June 1936 and June 1941. The multiplicity rate was 5.9 per cent. In Gaudin's (6) series of multiple malignant tumors from New Zealand, there were 229 out of 256 cases of primary lesions in the skin. About one-fifth of the total number of patients with cancer of the skin had more than one primary malignant neoplasm. The strikingly high proportion of multiple cutaneous cancer in the studies of Gaudin and Phillips is no doubt due to its prevalence in the regions in which the surveys were made.

The concept of the susceptibility of a particular organ or tissue to cancer was well developed by Lund (12). In a series of 1,548 cases of cancer of the mouth studied at the C. P. Huntington Memorial Hospital, he found 94 multiple cases (6 per cent); of these 31 had multiple cancer of the buccal mucosa, about 15 times the number expected on the basis of chance alone.

Present Series

Among the several considerations that will affect the computed incidence of multiple primary malignant growths, the advances in methods of tumor diagnosis and in end-result studies are fundamental. The trend of the investigations published in recent years suggests that thorough studies of multiple primary malignant neoplasms in the future may be expected to give an even greater preponderance of observed over expected multiple cases.

We are presenting our experience from 2,829 consecutive autopsies on cases of cancer performed in the laboratories of the C. P. Huntington Memorial Hospital, New England Deaconess Hospital, Pondville State Hospital, and Westfield State Sanatorium (Cancer Division) from January 1932 through December 1943. There are 194 cases of multiple malignant tumors. These are recorded on Tables I to X and summarized in Table XI.

This series is a continuation of the earlier one of 1,078 cases reported in 1932 by Warren and Gates (19), which covered a period from 1926 through 1931. The incidence of multiple primary malignant growths in the present series is almost double that of the first: 6.8 per cent as against 3.7 per cent. This probably is a reflection of the current awareness to cancer, which results in more complete clinical histories and an increased tendency to submit radiologically treated tumors to biopsy and to require histologic examination of all tumors excised. The incidence of both series together, comprising 3,907 cases, is 6 per cent. The material in each series has been handled in a similar manner, with only minor exceptions. The data in all the cases were adequate, and in the majority of
<table>
<thead>
<tr>
<th>Number</th>
<th>Sex</th>
<th>First cancer</th>
<th>Second cancer</th>
<th>Third cancer</th>
<th>Fourth cancer</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Age</td>
<td>Organ</td>
<td>Lesion</td>
<td>Primary present</td>
<td>Metastases removed</td>
</tr>
<tr>
<td>A-39-62</td>
<td>50</td>
<td>Skin, forehead</td>
<td>Basal-cell carcinoma</td>
<td>— — — 0.0 0.0</td>
<td>— — —</td>
</tr>
<tr>
<td>29-700</td>
<td>9</td>
<td>Ovary, left</td>
<td>Papillary adenocarcinoma</td>
<td>+ — — 0.0 0.0</td>
<td>— — —</td>
</tr>
<tr>
<td>37-A-195</td>
<td>61</td>
<td>Lip, lower</td>
<td>Epidermoid carcinoma, grade I</td>
<td>— — — 0.0 0.0</td>
<td>— — —</td>
</tr>
<tr>
<td>34-A-60</td>
<td>66</td>
<td>Lip, lower</td>
<td>Epidermoid carcinoma, grade II</td>
<td>+ — — 5.0 0.0</td>
<td>— — —</td>
</tr>
<tr>
<td>A-40-62</td>
<td>67</td>
<td>Rectum</td>
<td>Malignant adenoma</td>
<td>+ — — 0.0 0.0</td>
<td>+ — — 0.0 0.0</td>
</tr>
<tr>
<td>43-A-49</td>
<td>73</td>
<td>Mouth, right palate</td>
<td>Epidermoid carcinoma, grade III</td>
<td>+ — — 0.0 0.0</td>
<td>+ — — 0.0 0.0</td>
</tr>
</tbody>
</table>

In Tables I to X:

N.S. = not stated.

+ = histologically verified metastases excised.

— = lymph nodes removed and proved negative on microscopic examination; or, assumed metastases treated by radiation.

* = metastases found at autopsy could be attributed to one of or all the malignant tumors.
<table>
<thead>
<tr>
<th>Number</th>
<th>Sex</th>
<th>Age</th>
<th>Organ</th>
<th>Lesion</th>
<th>First cancer</th>
<th>Second cancer</th>
<th>Third cancer</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>37-A-132</td>
<td>♂</td>
<td>67</td>
<td>Skin, face</td>
<td>Basal-cell carcinoma</td>
<td>+ + + 15.0 12.0</td>
<td>79 Skin, left arm</td>
<td>Mixed basal and</td>
<td>+ + + 3.0</td>
</tr>
<tr>
<td>61</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>epidermoid carcinoma</td>
<td></td>
</tr>
<tr>
<td>A-41-4</td>
<td>♂</td>
<td>59</td>
<td>Sigmoid</td>
<td>Adenocarcinoma</td>
<td>+ + + 1.5 0.0</td>
<td>59 Colon, transverse</td>
<td>Adenocarcinoma</td>
<td>+ + + 1.5 0.0</td>
</tr>
<tr>
<td>39-023</td>
<td>♂</td>
<td>61</td>
<td>Cecum</td>
<td>Adenocarcinoma</td>
<td>+ + + 1.5 2.6</td>
<td>59 Colon, transverse</td>
<td>Adenocarcinoma</td>
<td>+ + + 1.5 2.6</td>
</tr>
<tr>
<td>52-027</td>
<td>♂</td>
<td>76</td>
<td>Rectum</td>
<td>Adenocarcinoma</td>
<td>+ + + 1.5 1.5</td>
<td>79 Colon, ascending</td>
<td>1.6</td>
<td>+ + + 0.2 0.2</td>
</tr>
<tr>
<td>34-A-76</td>
<td>♂</td>
<td>33</td>
<td>Ovaries</td>
<td>Malignant papillary adenocarcinoma</td>
<td>+ + + 8.0 7.0</td>
<td>40 Cervix</td>
<td>Epidermoid carcinoma</td>
<td>+ + + 1.6 0.0</td>
</tr>
<tr>
<td>59-381</td>
<td>♂</td>
<td>48</td>
<td>Breast, left</td>
<td>Adenocarcinoma</td>
<td>+ + + 2.6 1.0</td>
<td>49 Breast, right</td>
<td>Basal-cell carcinoma</td>
<td>+ + + 2.6 1.0</td>
</tr>
<tr>
<td>35-1988</td>
<td>♂</td>
<td>53</td>
<td>Uterus</td>
<td>Basal-cell carcinoma</td>
<td>+ + + 11.0 8.0</td>
<td>53 Basal-cell carcinoma</td>
<td>Basal-cell carcinoma</td>
<td>+ + + 11.0 8.0</td>
</tr>
<tr>
<td>60-431</td>
<td>♂</td>
<td>53</td>
<td>Uterus</td>
<td>Leiomyosarcoma</td>
<td>+ + + 5.0 0.0</td>
<td>53 Basal-cell carcinoma</td>
<td>Leiomyosarcoma</td>
<td>+ + + 5.0 0.0</td>
</tr>
<tr>
<td>34-A-17</td>
<td>♂</td>
<td>60</td>
<td>Skin, upper</td>
<td>Basal-cell carcinoma</td>
<td>+ + + 8.0 7.7</td>
<td>68 Basal-cell carcinoma</td>
<td>Leiomyosarcoma</td>
<td>+ + + 8.0 7.7</td>
</tr>
<tr>
<td>34-A-11</td>
<td>♂</td>
<td>64</td>
<td>Lip, lower</td>
<td>Basal-cell carcinoma</td>
<td>+ + + 3.0 2.0</td>
<td>67 Basal-cell carcinoma</td>
<td>Basal-cell carcinoma</td>
<td>+ + + 3.0 2.0</td>
</tr>
<tr>
<td>37-A-75</td>
<td>♂</td>
<td>65</td>
<td>Prostate</td>
<td>Basal-cell carcinoma</td>
<td>+ + + 8.0 6.0</td>
<td>71 Sigmoid</td>
<td>Basal-cell carcinoma</td>
<td>+ + + 8.0 6.0</td>
</tr>
<tr>
<td>47-948</td>
<td>♂</td>
<td>66</td>
<td>Bladder</td>
<td>Basal-cell carcinoma</td>
<td>+ + + 1.5 0.5</td>
<td>67 Bladder</td>
<td>Basal-cell carcinoma</td>
<td>+ + + 1.5 0.5</td>
</tr>
<tr>
<td>37-A-41</td>
<td>♂</td>
<td>66</td>
<td>Lip, lower</td>
<td>Basal-cell carcinoma</td>
<td>+ + + 9.5 8.3</td>
<td>74 Basal-cell carcinoma</td>
<td>Basal-cell carcinoma</td>
<td>+ + + 9.5 8.3</td>
</tr>
<tr>
<td>38-A-9</td>
<td>♂</td>
<td>67</td>
<td>Ovary, right</td>
<td>Basal-cell carcinoma</td>
<td>+ + + 0.5 0.5</td>
<td>67 Ovary</td>
<td>Basal-cell carcinoma</td>
<td>+ + + 0.5 0.5</td>
</tr>
<tr>
<td>19-862</td>
<td>♂</td>
<td>67</td>
<td>Uterus</td>
<td>Basal-cell carcinoma</td>
<td>+ + + 3.0 0.0</td>
<td>67 Uterus</td>
<td>Basal-cell carcinoma</td>
<td>+ + + 3.0 0.0</td>
</tr>
<tr>
<td>40-A-23</td>
<td>♂</td>
<td>69</td>
<td>Skin, left</td>
<td>Basal-cell carcinoma</td>
<td>+ + + 1.0 0.0</td>
<td>69 Basal-cell carcinoma</td>
<td>Basal-cell carcinoma</td>
<td>+ + + 1.0 0.0</td>
</tr>
<tr>
<td>41-976</td>
<td>♂</td>
<td>72</td>
<td>Lip, lower</td>
<td>Basal-cell carcinoma</td>
<td>+ + + 2.0 1.0</td>
<td>72 Basal-cell carcinoma</td>
<td>Basal-cell carcinoma</td>
<td>+ + + 2.0 1.0</td>
</tr>
<tr>
<td>41-A-49</td>
<td>♂</td>
<td>73</td>
<td>Prostate</td>
<td>Basal-cell carcinoma</td>
<td>+ + + 2.0 1.0</td>
<td>73 Basal-cell carcinoma</td>
<td>Basal-cell carcinoma</td>
<td>+ + + 2.0 1.0</td>
</tr>
<tr>
<td>35-A-55</td>
<td>♂</td>
<td>73</td>
<td>Bladder</td>
<td>Basal-cell carcinoma</td>
<td>+ + + 2.0 1.0</td>
<td>73 Bladder</td>
<td>Basal-cell carcinoma</td>
<td>+ + + 2.0 1.0</td>
</tr>
<tr>
<td>37-A-171</td>
<td>♂</td>
<td>74</td>
<td>Skin, right</td>
<td>Basal-cell carcinoma</td>
<td>+ + + 4.0 3.0</td>
<td>75 Basal-cell carcinoma</td>
<td>Basal-cell carcinoma</td>
<td>+ + + 4.0 3.0</td>
</tr>
<tr>
<td>43-A-18</td>
<td>♂</td>
<td>74</td>
<td>Mouth, floor</td>
<td>Basal-cell carcinoma</td>
<td>+ + + 5.0 4.0</td>
<td>78 Mouth, floor</td>
<td>Basal-cell carcinoma</td>
<td>+ + + 5.0 4.0</td>
</tr>
<tr>
<td>39-037</td>
<td>♂</td>
<td>77</td>
<td>Uterus</td>
<td>Basal-cell carcinoma</td>
<td>+ + + 2.0 1.0</td>
<td>77 Uterus</td>
<td>Basal-cell carcinoma</td>
<td>+ + + 2.0 1.0</td>
</tr>
<tr>
<td>36-A-14</td>
<td>♂</td>
<td>85</td>
<td>Skin, hand</td>
<td>Basal-cell carcinoma</td>
<td>+ + + 2.0 1.0</td>
<td>87 Kidney</td>
<td>Basal-cell carcinoma</td>
<td>+ + + 2.0 1.0</td>
</tr>
</tbody>
</table>
### Table III: Double Carcinomas of the Same Organ

<table>
<thead>
<tr>
<th>Number</th>
<th>Sex</th>
<th>Age</th>
<th>Organ</th>
<th>Lesion</th>
<th>First cancer</th>
<th>Metastases present</th>
<th>Metastases removed</th>
<th>Duration</th>
<th>Age</th>
<th>Organ</th>
<th>Lesion</th>
<th>Second cancer</th>
<th>Metastases present</th>
<th>Metastases removed</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Skin:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A-38-56</td>
<td>♂</td>
<td>76</td>
<td>Skin, body</td>
<td>Epidermoid carcinoma, grade II</td>
<td>-</td>
<td>+</td>
<td>+</td>
<td>0.3</td>
<td>76</td>
<td>Skin, N. S.</td>
<td>Early carcinoma</td>
<td>+</td>
<td>-</td>
<td>N.S.</td>
<td></td>
</tr>
<tr>
<td>37-A-71</td>
<td>♂</td>
<td>79</td>
<td>Skin, right face</td>
<td>Basal-cell carcinoma</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>4.0</td>
<td>79</td>
<td>Skin, nose</td>
<td>Basal-cell carcinoma, grade I</td>
<td>+</td>
<td>-</td>
<td>4.0</td>
<td></td>
</tr>
<tr>
<td>43-A-51</td>
<td>♂</td>
<td>81</td>
<td>Skin, right postauricular</td>
<td>Basal-cell carcinoma</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>5.0</td>
<td>81</td>
<td>Skin, left lower face</td>
<td>Epidermoid carcinoma, grade I</td>
<td>-</td>
<td>-</td>
<td>5.0</td>
<td></td>
</tr>
</tbody>
</table>

| B. Pharynx: |     |     |                  |                                |              |                    |                    |          |     |                  |                                |               |                    |                    |          |
| 40-A-1 | ♂ | 74  | Lip, lower      | Epidermoid carcinoma, grade I | -            | -                  | -                  | 3.0      | 74  | Mouth            | Epidermoid carcinoma, ungraded | -             | -                  | 3.0                 |          |

| C. Large intestine: |     |     |                  |                                |              |                    |                    |          |     |                  |                                |               |                    |                    |          |
| 38-A-7 | ♂ | 42  | Cecum            | Adenocarcinoma                 | -            | -                  | -                  | N.S.     | 42  | Rectum          | Adenocarcinoma               | +             | +                  | N.S.                |          |
| 40-A-34 | ♂ | 50  | Rectum          | Malignant adenoma              | -            | -                  | -                  | 0.6      | 50  | Sigmoid         | Adenocarcinoma               | -             | +                  | 0.6                 |          |
| 25-326 | ♂ | 52  | Colon, ascendent | Adenocarcinoma                 | +            | +                  | +                  | 1.5      | 53  | Rectum          | Malignant adenoma            | -             | +                  | N.S.                |          |
| 42-A-48 | ♂ | 57  | Colon, transverse | Adenocarcinoma                 | +            | *                  | -                  | 2.0      | 57  | Colon, transverse Rectum | Malignant adenoma           | +             | *                  | -                  | 2.0      |
| 48-A-4 | ♂ | 59  | Rectum          | Carcinoma                      | +            | +                  | +                  | 1.0      | 59  | Rectum          | Carcinoma                    | +             | -                  | 1.0                 |          |
| 49-924 | ♂ | 60  | Rectum          | Adenocarcinoma                 | -            | -                  | -                  | 0.0      | 60  | Colon, splenic flexure Rectum | Adenocarcinoma           | -             | -                  | 1.0                 |          |
| 39-A-80 | ♂ | 61  | Colon, splenic flexure | Adenocarcinoma                 | -            | -                  | +                  | 4.0      | 65  | Rectum          | Adenocarcinoma               | -             | -                  | N.S.                |          |
| 39-A-145 | ♂ | 62  | Colon          | Adenocarcinoma                 | -            | -                  | +                  | 0.8      | 62  | Rectum          | Malignant polyo adenocarcinoma | +             | -                  | N.S.                |          |
| 39-A-68 | ♂ | 64  | Colon, descending | Adenocarcinoma                 | +            | *                  | -                  | 0.5      | 64  | Colon, hepatic flexure Rectum | Adenocarcinoma           | +             | -                  | 0.5                 |          |
| 62-A-183 | ♂ | 64  | Sigmoid         | Adenocarcinoma                 | +            | *                  | -                  | 0.3      | 64  | Sigmoid         | Adenocarcinoma               | +             | +                  | N.S.                |          |
| 32-A-80 | ♂ | 65  | Sigmoid         | Adenocarcinoma                 | -            | -                  | -                  | N.S.     | 70  | Colon           | Adenocarcinoma               | -             | -                  | N.S.                |          |
| 42-286 | ♂ | 68  | Colon, transverse | Adenocarcinoma                 | +            | +                  | +                  | 0.5      | 68  | Rectum          | Malignant adenoma            | +             | +                  | 0.5                 |          |
| 38-A-27 | ♂ | 68  | Rectum          | Adenocarcinoma                 | +            | +                  | +                  | 0.6      | 68  | Rectum          | Malignant adenoma            | +             | +                  | 0.5                 |          |
| 29-267 | ♂ | 69  | Sigmoid         | Malignant adenoma              | +            | -                  | -                  | N.S.     | 69  | Colon, splenic flexure rectum | Adenocarcinoma          | +             | -                  | N.S.                |          |
| 36-A-124 | ♂ | 75  | Rectum          | Adenocarcinoma                 | +            | *                  | -                  | 1.7      | 76  | Cecum           | Malignant adenoma            | +             | -                  | N.S.                |          |
| 37-A-162 | ♂ | 78  | Rectum          | Adenocarcinoma                 | -            | -                  | +                  | 0.3      | 78  | Rectum          | Malignant adenoma            | -             | -                  | 0.3                 |          |

### Table IV: Double Sarcomas

<table>
<thead>
<tr>
<th>Number</th>
<th>Sex</th>
<th>Age</th>
<th>Organ</th>
<th>Lesion</th>
<th>First cancer</th>
<th>Metastases present</th>
<th>Metastases removed</th>
<th>Duration</th>
<th>Age</th>
<th>Organ</th>
<th>Lesion</th>
<th>Second cancer</th>
<th>Metastases present</th>
<th>Metastases removed</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Of the same systems:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>41-3589</td>
<td>♂</td>
<td>35</td>
<td>Lymph node</td>
<td>Hodgkin's disease</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>2.0</td>
<td>37</td>
<td>Granulopoeitic tissue</td>
<td>Bone, pelvis</td>
<td>+</td>
<td>+</td>
<td>N.S.</td>
<td></td>
</tr>
<tr>
<td>41-A-75</td>
<td>♂</td>
<td>60</td>
<td>Bone, humerus</td>
<td>Osteogenic sarcoma</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>N.S.</td>
<td>60</td>
<td>Granulopoietic tissue</td>
<td>Bone, pelvis</td>
<td>+</td>
<td>+</td>
<td>N.S.</td>
<td></td>
</tr>
</tbody>
</table>

| B. Of different systems: |     |     |                  |                 |              |                    |                    |          |     |                  |                 |               |                    |                    |          |
| 55-706 | ♂ | 26  | Nerve, trunk     | Neurogenic sarcoma | +            | +                  | -                  | 10.0     | 36  | Granulopoietic tissue | Skin, check | +             | +                  | N.S.                |          |
| 36-A-126 | ♂ | 72  | Lymphoid tissue  | Lymphatic leukemia | +            | +                  | -                  | 0.6      | 72  | Granulopoietic tissue | Skin, check | +             | -                  | 0.6                 |          |

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### Table V: Double Carcinomas of Symmetrical Organs

<table>
<thead>
<tr>
<th>Number</th>
<th>Sex</th>
<th>Age</th>
<th>Organ</th>
<th>Lesion</th>
<th>First cancer</th>
<th>Second cancer</th>
<th>Lesion</th>
<th>Interval</th>
<th>Age</th>
<th>Organ</th>
<th>Lesion</th>
<th>Measured present</th>
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<th>Duration</th>
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<td>A. Female breasts:</td>
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</tr>
<tr>
<td>43-A-33</td>
<td>♀</td>
<td>43</td>
<td>Breast, right</td>
<td>Carcinoma simplex</td>
<td>− + + 2</td>
<td>N.S.</td>
<td>45</td>
<td>Breast, left</td>
<td>Carcinoma simplex</td>
<td>+ + − N.S.</td>
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<td>35-A-48</td>
<td>♀</td>
<td>45</td>
<td>Breast, right</td>
<td>Carcinoma simplex</td>
<td>− + + 5</td>
<td>4.0</td>
<td>49</td>
<td>Accessory breast, left axilla</td>
<td>Carcinoma simplex</td>
<td>− + − N.S.</td>
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<tr>
<td>32.640</td>
<td>♀</td>
<td>48</td>
<td>Breast, right</td>
<td>Carcinoma simplex</td>
<td>− + − 2</td>
<td>N.S.</td>
<td>50</td>
<td>Breast, left</td>
<td>Carcinoma simplex</td>
<td>+ + − N.S.</td>
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<tr>
<td>41.220</td>
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<td>Carcinoma simplex</td>
<td>− + + 2</td>
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<td>57</td>
<td>Breast, right</td>
<td>Carcinoma simplex</td>
<td>− + + 0.5</td>
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<td>43.716</td>
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<td>Breast, left</td>
<td>Carcinoma simplex</td>
<td>− + + 2</td>
<td>1.0</td>
<td>62</td>
<td>Breast, right</td>
<td>Carcinoma simplex</td>
<td>+ + − 1.0</td>
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### Table VI: Double Carcinomas of the Same System

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<th>Number</th>
<th>Sex</th>
<th>Age</th>
<th>Organ</th>
<th>Lesion</th>
<th>First cancer</th>
<th>Second cancer</th>
<th>Lesion</th>
<th>Interval</th>
<th>Age</th>
<th>Organ</th>
<th>Lesion</th>
<th>Measured present</th>
<th>Measured removed</th>
<th>Duration</th>
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<tr>
<td>35-A-81</td>
<td>♂</td>
<td>55</td>
<td>Rectum</td>
<td>Adenocarcinoma</td>
<td>+ − − 0.7</td>
<td>N.S.</td>
<td>55</td>
<td>Ampulla of Vater</td>
<td>Adenocarcinoma</td>
<td>+ − − N.S.</td>
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<td>35-A-76</td>
<td>♂</td>
<td>56</td>
<td>Sigmoid</td>
<td>Adenocarcinoma</td>
<td>+ − + 1.0</td>
<td>0.0</td>
<td>56</td>
<td>Stomach</td>
<td>Adenocarcinoma</td>
<td>+ − − 1.0</td>
<td></td>
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<td>49.039</td>
<td>♂</td>
<td>56</td>
<td>Colon, hepatic flexure</td>
<td>Adenocarcinoma</td>
<td>− − + N.S.</td>
<td>13.0</td>
<td>67</td>
<td>Stomach</td>
<td>Adenocarcinoma</td>
<td>+ − + 2.0</td>
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<tr>
<td>37.307</td>
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<td>59</td>
<td>Rectum</td>
<td>Carcinoma simplex, malignant adenoma</td>
<td>− + + 0.4</td>
<td>N.S.</td>
<td>59</td>
<td>Stomach</td>
<td>Adenocarcinoma</td>
<td>+ − − N.S.</td>
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<td>Rectum</td>
<td>Carcinoma simplex</td>
<td>− − + 6.0</td>
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<td>69</td>
<td>Esophagus</td>
<td>Epidermoid carcinoma, ungraded</td>
<td>+ − − 0.5</td>
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<td>A-41-10</td>
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<td>Esophagus</td>
<td>Epidermoid carcinoma, grade III</td>
<td>+ + − 0.7</td>
<td>N.S.</td>
<td>67</td>
<td>Stomach</td>
<td>Adenocarcinoma</td>
<td>+ − − N.S.</td>
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<tr>
<td>34-A-122</td>
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<td>68</td>
<td>Sigmoid</td>
<td>Adenocarcinoma</td>
<td>+ + − 1.0</td>
<td>N.S.</td>
<td>69</td>
<td>Stomach</td>
<td>Adenocarcinoma</td>
<td>+ − − N.S.</td>
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<tr>
<td>A-38-69</td>
<td>♂</td>
<td>71</td>
<td>Stomach</td>
<td>Malignant adenoma</td>
<td>+ − − 1.3</td>
<td>1.0</td>
<td>72</td>
<td>Rectum</td>
<td>Adenocarcinoma</td>
<td>+ − − 0.3</td>
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<tr>
<td>38-A-46</td>
<td>♂</td>
<td>76</td>
<td>Rectum</td>
<td>Adenocarcinoma</td>
<td>+ + − 0.6</td>
<td>N.S.</td>
<td>76</td>
<td>Stomach</td>
<td>Adenocarcinoma</td>
<td>+ − − N.S.</td>
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B. Male genitourinary tract:
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<thead>
<tr>
<th>Number</th>
<th>Sex</th>
<th>Age</th>
<th>Organ</th>
<th>Lesion</th>
<th>First cancer</th>
<th>Second cancer</th>
<th>Lesion</th>
<th>Interval</th>
<th>Age</th>
<th>Organ</th>
<th>Lesion</th>
<th>Measured present</th>
<th>Measured removed</th>
<th>Duration</th>
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<tbody>
<tr>
<td>34-A-172</td>
<td>♂</td>
<td>68</td>
<td>Bladder</td>
<td>Epidermoid carcinoma, grade III</td>
<td>+ + − 2.5</td>
<td>N.S.</td>
<td>70</td>
<td>Prostate</td>
<td>Adenocarcinoma</td>
<td>+ − − N.S.</td>
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<tr>
<td>38-A-89</td>
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<td>68</td>
<td>Bladder</td>
<td>Carcinoma simplex</td>
<td>+ + − 0.8</td>
<td>N.S.</td>
<td>68</td>
<td>Prostate</td>
<td>Adenocarcinoma</td>
<td>+ − − N.S.</td>
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<tr>
<td>48.792</td>
<td>♂</td>
<td>71</td>
<td>Bladder</td>
<td>Epidermoid carcinoma, grade III</td>
<td>+ + − 1.0</td>
<td>0.0</td>
<td>71</td>
<td>Prostate</td>
<td>Carcinoma simplex</td>
<td>+ − − 1.0</td>
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<td>16.924</td>
<td>♂</td>
<td>72</td>
<td>Prostate</td>
<td>Carcinoma simplex</td>
<td>− + − 0.6</td>
<td>N.S.</td>
<td>72</td>
<td>Kidney</td>
<td>Adenocarcinoma</td>
<td>+ − − N.S.</td>
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<td>37-A-144</td>
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<td>Adenocarcinoma</td>
<td>+ − − 1.3</td>
<td>N.S.</td>
<td>80</td>
<td>Kidney</td>
<td>Renal cell adenocarcinoma</td>
<td>+ − − N.S.</td>
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C. Miscellaneous:
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<th>Organ</th>
<th>Lesion</th>
<th>First cancer</th>
<th>Second cancer</th>
<th>Lesion</th>
<th>Interval</th>
<th>Age</th>
<th>Organ</th>
<th>Lesion</th>
<th>Measured present</th>
<th>Measured removed</th>
<th>Duration</th>
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<tbody>
<tr>
<td>40-A-85</td>
<td>♂</td>
<td>70</td>
<td>Larynx</td>
<td>Epidermoid carcinoma, grade III</td>
<td>− − − 4.0</td>
<td>N.S.</td>
<td>74</td>
<td>Bronchus</td>
<td>Epidermoid carcinoma, grade III</td>
<td>+ − − N.S.</td>
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</table>
Table VII: Double Carcinomas of Different Systems

<table>
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<tr>
<th>Number</th>
<th>Sex</th>
<th>Age</th>
<th>Organ</th>
<th>Lesion</th>
<th>Primary growth</th>
<th>Metastases present</th>
<th>Metastases removed</th>
<th>Duration</th>
<th>Interval</th>
<th>Age</th>
<th>Organ</th>
<th>Lesion</th>
<th>Primary growth</th>
<th>Metastases present</th>
<th>Metastases removed</th>
<th>Duration</th>
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<tbody>
<tr>
<td>A. Skin and gastrointestinal tract:</td>
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<td>32-A-47</td>
<td>♂</td>
<td>55</td>
<td>Rectum</td>
<td>Adenocarcinoma</td>
<td>-</td>
<td>+</td>
<td>3.0</td>
<td>2.5</td>
<td>58 Skin, left ear</td>
<td>Epidermoid carcinoma, grade I</td>
<td>+</td>
<td>-</td>
<td>0.5</td>
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<td>38-A-86</td>
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<td>Lip, lower</td>
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<td>-</td>
<td>-</td>
<td>3.5</td>
<td>2.0</td>
<td>60 Rectum</td>
<td>Adenocarcinoma</td>
<td>+</td>
<td>-</td>
<td>1.5</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>33-A-129</td>
<td>♂</td>
<td>59</td>
<td>Skin, upper face</td>
<td>Basal-cell carcinoma</td>
<td>-</td>
<td>-</td>
<td>4.3</td>
<td>4.0</td>
<td>63 Esophagus</td>
<td>Epidermoid carcinoma, grade II</td>
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<td>Rectum</td>
<td>Malignant adenoma</td>
<td>+</td>
<td>-</td>
<td>0.3</td>
<td>N.S.</td>
<td>62 Skin, abdomen</td>
<td>Basal-cell carcinoma</td>
<td>+</td>
<td>-</td>
<td>N.S.</td>
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<td>Skin, cheek</td>
<td>Epidermoid carcinoma, grade I</td>
<td>-</td>
<td>-</td>
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<td>69 Stomach</td>
<td>Adenocarcinoma</td>
<td>+</td>
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<td>Skin, right cheek</td>
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<td>-</td>
<td>2.0</td>
<td>1.0</td>
<td>72 Stomach</td>
<td>Carcinoma simplex</td>
<td>+</td>
<td>-</td>
<td>1.0</td>
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<td>Cervix</td>
<td>Adenocarcinoma</td>
<td>-</td>
<td>-</td>
<td>0.2</td>
<td>N.S.</td>
<td>74 Skin, chest</td>
<td>Basal-cell carcinoma</td>
<td>+</td>
<td>-</td>
<td>N.S.</td>
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<td>B. Skin and genitourinary tract:</td>
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</tr>
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<td>A-39-69</td>
<td>♂</td>
<td>55</td>
<td>Skin, nose</td>
<td>Basal-cell carcinoma</td>
<td>-</td>
<td>-</td>
<td>7.0</td>
<td>6.2</td>
<td>61 Bladder</td>
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<td>-</td>
<td>N.S.</td>
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<td>-</td>
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<td>N.S.</td>
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<td>Adenocarcinoma</td>
<td>+</td>
<td>-</td>
<td>N.S.</td>
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<tr>
<td>38-A-33</td>
<td>♂</td>
<td>77</td>
<td>Prostate</td>
<td>Adenocarcinoma</td>
<td>+</td>
<td>-</td>
<td>0.3</td>
<td>0.0</td>
<td>77 Skin, forearm</td>
<td>Epidermoid carcinoma, grade I</td>
<td>-</td>
<td>-</td>
<td>0.3</td>
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<td>34-A-82</td>
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<td>84</td>
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<td>Basal-cell carcinoma</td>
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<td>-</td>
<td>6.0</td>
<td>N.S.</td>
<td>90 Prostate</td>
<td>Adenocarcinoma</td>
<td>+</td>
<td>-</td>
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<td>-</td>
<td>+</td>
<td>5.5</td>
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<td>57 Breast, right</td>
<td>Epidermoid carcinoma</td>
<td>+</td>
<td>-</td>
<td>4.8</td>
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<td>Carcinoma simplex</td>
<td>-</td>
<td>+</td>
<td>12.0</td>
<td>10.0</td>
<td>60 Cervix</td>
<td>Epidermoid carcinoma, grade II</td>
<td>+</td>
<td>-</td>
<td>2.0</td>
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<td>-</td>
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### Table VII (continued)

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### G. Miscellaneous:

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<td>Epidermoid carcinoma, grade I</td>
<td>+</td>
<td>-</td>
<td>1.0</td>
<td>N.S.</td>
</tr>
<tr>
<td>A-41-2</td>
<td>♂</td>
<td>76</td>
<td>Breast, right</td>
<td>Carcinoma simplex</td>
<td>+</td>
<td>-</td>
<td>1.0</td>
<td>N.S.</td>
</tr>
<tr>
<td>39-A-95</td>
<td>♂</td>
<td>77</td>
<td>Mouth</td>
<td>Epidermoid carcinoma, grade I</td>
<td>+</td>
<td>-</td>
<td>1.0</td>
<td>N.S.</td>
</tr>
<tr>
<td>35-A-45</td>
<td>♂</td>
<td>77</td>
<td>Tongue</td>
<td>Epidermoid carcinoma, grade I</td>
<td>+</td>
<td>-</td>
<td>1.0</td>
<td>N.S.</td>
</tr>
<tr>
<td>37-A-190</td>
<td>♂</td>
<td>77</td>
<td>Larynx</td>
<td>Epidermoid carcinoma, grade II</td>
<td>+</td>
<td>-</td>
<td>0.6</td>
<td>N.S.</td>
</tr>
<tr>
<td>39-A-119</td>
<td>♂</td>
<td>77</td>
<td>Tongue</td>
<td>Epidermoid carcinoma, grade I</td>
<td>+</td>
<td>-</td>
<td>0.3</td>
<td>N.S.</td>
</tr>
<tr>
<td>42-A-10</td>
<td>♂</td>
<td>78</td>
<td>Larynx</td>
<td>Epidermoid carcinoma, grade II</td>
<td>+</td>
<td>-</td>
<td>1.0</td>
<td>N.S.</td>
</tr>
<tr>
<td>35-A-59</td>
<td>♂</td>
<td>79</td>
<td>Liver cell</td>
<td>Carcinoma simplex</td>
<td>+</td>
<td>-</td>
<td>0.8</td>
<td>0.2</td>
</tr>
<tr>
<td>39-A-36</td>
<td>♂</td>
<td>82</td>
<td>Thyroid</td>
<td>Carcinoma simplex</td>
<td>+</td>
<td>-</td>
<td>1.0</td>
<td>N.S.</td>
</tr>
</tbody>
</table>
### Table VIII: Carcinoma and Sarcoma of the Same Organ

<table>
<thead>
<tr>
<th>Number</th>
<th>Sex</th>
<th>Age</th>
<th>Organ</th>
<th>Lesion</th>
<th>First cancer</th>
<th>Second cancer</th>
<th>Interval</th>
<th>Primary metastases</th>
<th>Metastases removed</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>45-A-48</td>
<td>♂</td>
<td>54</td>
<td>Kidney, left</td>
<td>Renal cell adenocarcinoma</td>
<td>+ - - 1.0</td>
<td>N.S.</td>
<td>54</td>
<td>Kidney, left</td>
<td>Rhabdomyosarcoma</td>
<td>+ - - N.S.</td>
</tr>
</tbody>
</table>

### Table IX: Carcinoma and Sarcoma of the Same System

<table>
<thead>
<tr>
<th>Number</th>
<th>Sex</th>
<th>Age</th>
<th>Organ</th>
<th>Lesion</th>
<th>First cancer</th>
<th>Second cancer</th>
<th>Interval</th>
<th>Primary metastases</th>
<th>Metastases removed</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>A-49-38</td>
<td>♀</td>
<td>46</td>
<td>Uterus</td>
<td>Adenocarcinoma</td>
<td>+ - - 1.0</td>
<td>N.S.</td>
<td>47</td>
<td>Kidney, right</td>
<td>Myxoliposarcoma</td>
<td>+ - - N.S.</td>
</tr>
<tr>
<td>37,106</td>
<td>♂</td>
<td>61</td>
<td>Bladder</td>
<td>Myxosarcoma</td>
<td>+ - - 1.5</td>
<td>N.S.</td>
<td>62</td>
<td>Kidney, left</td>
<td>Epidermoid carcinoma I</td>
<td>+ - - N.S.</td>
</tr>
</tbody>
</table>

### Table X: Carcinoma and Sarcoma of Different Systems

<table>
<thead>
<tr>
<th>Number</th>
<th>Sex</th>
<th>Age</th>
<th>Organ</th>
<th>Lesion</th>
<th>First cancer</th>
<th>Second cancer</th>
<th>Interval</th>
<th>Primary metastases</th>
<th>Metastases removed</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>33-A-148</td>
<td>♀</td>
<td>28</td>
<td>Breast, left</td>
<td>Carcinoma simplex</td>
<td>+ - - 2.3</td>
<td>0.5</td>
<td>29</td>
<td>Mandible, right</td>
<td>Osteogenic sarcoma</td>
<td>+ - - 1.8</td>
</tr>
<tr>
<td>37-A-113</td>
<td>♀</td>
<td>34</td>
<td>Lymph nodes Hodgkin’s disease</td>
<td>+ - - 0.8</td>
<td>0.5</td>
<td>35</td>
<td>Breast, left</td>
<td>Carcinoma simplex</td>
<td>- + - 0.3</td>
<td></td>
</tr>
<tr>
<td>40-762</td>
<td>♂</td>
<td>43</td>
<td>Skin, nose</td>
<td>Basal-cell carcinoma</td>
<td>+ - - 11.0</td>
<td>N.S.</td>
<td>54</td>
<td>Lymph nodes</td>
<td>Myelogenous leukemia</td>
<td>+ + - N.S.</td>
</tr>
<tr>
<td>15-606</td>
<td>♀</td>
<td>50</td>
<td>Breast, right</td>
<td>Carcinoma simplex</td>
<td>+ - - 2.3</td>
<td>N.S.</td>
<td>52</td>
<td>Uterus</td>
<td>Leiomyosarcoma</td>
<td>+ - - N.S.</td>
</tr>
<tr>
<td>19-392</td>
<td>♂</td>
<td>51</td>
<td>Breast, left</td>
<td>Carcinoma simplex</td>
<td>+ - - 1.0</td>
<td>N.S.</td>
<td>51</td>
<td>Lymph nodes Hodgkin’s disease</td>
<td>+ - - N.S.</td>
<td></td>
</tr>
<tr>
<td>A-40-67</td>
<td>♂</td>
<td>55</td>
<td>Skin, nose</td>
<td>Basal-cell carcinoma</td>
<td>+ - - 21.0</td>
<td>20.0</td>
<td>75</td>
<td>Lymphoid tissue</td>
<td>Lymphosarcoma</td>
<td>+ + - 1.0</td>
</tr>
<tr>
<td>32-435</td>
<td>♂</td>
<td>57</td>
<td>Breast, left</td>
<td>Carcinoma simplex</td>
<td>+ - - 13.0</td>
<td>9.0</td>
<td>66</td>
<td>Skin, arm</td>
<td>Hemangiendoendothelioma</td>
<td>- + - 4.0</td>
</tr>
<tr>
<td>39-A-30</td>
<td>♂</td>
<td>57</td>
<td>Bladder</td>
<td>Epidermoid carcinoma, grade III</td>
<td>+ - - 1.0</td>
<td>0.5</td>
<td>58</td>
<td>Skin, N.S.</td>
<td>Malignant melanoma</td>
<td>+ - - 5.0</td>
</tr>
<tr>
<td>40-A-21</td>
<td>♂</td>
<td>57</td>
<td>Thigh, subcutaneous tissue Myxoliposarcoma</td>
<td>+ - - 5.0</td>
<td>4.5</td>
<td>62</td>
<td>Bladder</td>
<td>Undifferentiated carcinoma</td>
<td>+ - - 0.5</td>
<td></td>
</tr>
<tr>
<td>35-A-14</td>
<td>♀</td>
<td>58</td>
<td>Skin, upper face</td>
<td>Epidermoid carcinoma, grade III</td>
<td>+ - - 2.2</td>
<td>0.7</td>
<td>59</td>
<td>Lymphoid tissue</td>
<td>Lymphatic leukemia</td>
<td>+ + - 1.5</td>
</tr>
<tr>
<td>38-A-47</td>
<td>♂</td>
<td>62</td>
<td>Breast, right</td>
<td>Adenohyperplasia</td>
<td>+ - - 5.0</td>
<td>N.S.</td>
<td>63</td>
<td>Uterus</td>
<td>Leiomyosarcoma</td>
<td>+ - - N.S.</td>
</tr>
<tr>
<td>20-450</td>
<td>♂</td>
<td>61</td>
<td>Bronchus</td>
<td>Adenocarcinoma</td>
<td>+ - - 1.1</td>
<td>N.S.</td>
<td>62</td>
<td>Uterus</td>
<td>Leiomyosarcoma</td>
<td>+ - - N.S.</td>
</tr>
<tr>
<td>36-A-121</td>
<td>♂</td>
<td>62</td>
<td>Granulopoietic tissue</td>
<td>Myelogenous leukemia</td>
<td>+ - - 3.0</td>
<td>N.S.</td>
<td>65</td>
<td>Breast, left</td>
<td>Carcinoma simplex</td>
<td>+ - - N.S.</td>
</tr>
<tr>
<td>A 39-79</td>
<td>♂</td>
<td>63</td>
<td>Lymphoid tissue</td>
<td>Lymphosarcoma</td>
<td>+ - - 1.0</td>
<td>0.8</td>
<td>64</td>
<td>Stomach</td>
<td>Adenocarcinoma</td>
<td>+ - - 0.2</td>
</tr>
<tr>
<td>37-A-5</td>
<td>♂</td>
<td>66</td>
<td>Cervix</td>
<td>Epidermoid carcinoma, grade I</td>
<td>+ - - 5.0</td>
<td>2.0</td>
<td>68</td>
<td>Skin, right</td>
<td>Malignant melanoma</td>
<td>+ - - 3.0</td>
</tr>
<tr>
<td>34-A-78</td>
<td>♂</td>
<td>66</td>
<td>Tibia, left</td>
<td>Osteogenic sarcoma</td>
<td>+ - - 0.5</td>
<td>N.S.</td>
<td>66</td>
<td>Kidney, left</td>
<td>Adenocarcinoma</td>
<td>+ - - N.S.</td>
</tr>
<tr>
<td>40-528</td>
<td>♂</td>
<td>67</td>
<td>Lymphoid tissue</td>
<td>Lymphatic leukemia</td>
<td>+ - - 4.0</td>
<td>N.S.</td>
<td>71</td>
<td>Colon</td>
<td>Malignant adenoma</td>
<td>+ - - N.S.</td>
</tr>
<tr>
<td>37-A-57</td>
<td>♂</td>
<td>68</td>
<td>Pharynx</td>
<td>Undifferentiated carcinoma</td>
<td>+ - - 0.5</td>
<td>0.0</td>
<td>68</td>
<td>Lymph nodes Hodgkin’s disease</td>
<td>+ - - 0.5</td>
<td></td>
</tr>
<tr>
<td>42-A-47</td>
<td>♂</td>
<td>68</td>
<td>Bladder</td>
<td>Epidermoid carcinoma, undifferentiated</td>
<td>+ - - 2.0</td>
<td>2.0</td>
<td>70</td>
<td>Lymphoid tissue</td>
<td>Myelogenous leukemia</td>
<td>+ - - 0.1</td>
</tr>
<tr>
<td>33-A-63</td>
<td>♂</td>
<td>68</td>
<td>Stomach</td>
<td>Lymphosarcoma</td>
<td>+ - - 0.5</td>
<td>N.S.</td>
<td>68</td>
<td>Liver, bile ducts</td>
<td>Lymphoma</td>
<td>+ - - N.S.</td>
</tr>
<tr>
<td>32-A-56</td>
<td>♂</td>
<td>70</td>
<td>Stomach</td>
<td>Adenocarcinoma</td>
<td>+ - - 2.0</td>
<td>1.7</td>
<td>72</td>
<td>Lymphoid tissue</td>
<td>Lymphoma</td>
<td>+ - - 0.3</td>
</tr>
<tr>
<td>45-972</td>
<td>♂</td>
<td>73</td>
<td>Granulopoietic tissue</td>
<td>Acute myelogenous leukemia</td>
<td>+ - - 0.5</td>
<td>N.S.</td>
<td>73</td>
<td>Lung</td>
<td>Carcinoma simplex</td>
<td>+ - - N.S.</td>
</tr>
<tr>
<td>35-A-32</td>
<td>♂</td>
<td>76</td>
<td>Lymph nodes Hodgkin’s disease</td>
<td>+ - - 0.7</td>
<td>N.S.</td>
<td>76</td>
<td>Pancreas</td>
<td>Adenocarcinoma</td>
<td>+ - - N.S.</td>
<td></td>
</tr>
<tr>
<td>40-22</td>
<td>♂</td>
<td>76</td>
<td>Cervix</td>
<td>Epidermoid carcinoma, grade II</td>
<td>+ - - 0.2</td>
<td>0.0</td>
<td>76</td>
<td>Lymphoid tissue</td>
<td>Acute myelogenous leukemia</td>
<td>+ - - 0.2</td>
</tr>
<tr>
<td>41-A-89</td>
<td>♂</td>
<td>81</td>
<td>Antrum, left</td>
<td>Plasmacytoma</td>
<td>+ - - 0.8</td>
<td>N.S.</td>
<td>82</td>
<td>Prostate</td>
<td>Adenocarcinoma</td>
<td>+ - - N.S.</td>
</tr>
<tr>
<td>41-2013</td>
<td>♂</td>
<td>81</td>
<td>Skin, foot</td>
<td>Malignant melanoma</td>
<td>+ - - 6.0</td>
<td>4.0</td>
<td>85</td>
<td>Prostate</td>
<td>Carcinoma simplex</td>
<td>+ + - 2.0</td>
</tr>
<tr>
<td>35-A-68</td>
<td>♂</td>
<td>82</td>
<td>Breast, left</td>
<td>Carcinoma simplex</td>
<td>+ - - 2.0</td>
<td>1.8</td>
<td>84</td>
<td>Lymph nodes Hodgkin’s disease</td>
<td>+ - - 0.2</td>
<td></td>
</tr>
<tr>
<td>46-277</td>
<td>♂</td>
<td>83</td>
<td>Peritoneum</td>
<td>Peritoneal sarcoma</td>
<td>+ - - 0.2</td>
<td>N.S.</td>
<td>83</td>
<td>Colon</td>
<td>Adenocarcinoma</td>
<td>+ - - N.S.</td>
</tr>
</tbody>
</table>

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instances complete. All diagnoses were based on histologic sections, and cases of malignant tumors removed prior to autopsy were not accepted unless the sections of such tumors were reviewed and the diagnosis confirmed. Only those tumors that unquestionably filled the generally accepted criteria for malignancy were considered. The criteria for multiplicity outlined by Warren and Gates (19) in 1932 were closely followed, namely: "Each of the tumors must present a definite picture of malignancy, each must be distinct, and the probability of one being a metastasis of the other must be excluded."

Malignant tumors of the same organ or of symmetrical organs were included only if the clinical history and the gross and microscopic findings proved them to be independent. Thus only 6 cases of bilateral breast cancer were accepted out of a total of 10. All cases of bilateral ovarian malignant tumors were excluded because of the difficulty of differentiating between metastases and independent growths.

Teratomas were accepted only if there was microscopic evidence of malignancy. Primary intracranial tumors were excluded because of the difficulty in distinguishing between benign and malignant tumors in this locality. Furthermore, the brain was not examined in the majority of cases.

<table>
<thead>
<tr>
<th>Table XI: Summary of Tables I to X</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Table I: Cases of Four Malignant Tumors</td>
</tr>
<tr>
<td>A. Skin.</td>
</tr>
<tr>
<td>B. Miscellaneous.</td>
</tr>
<tr>
<td>Total</td>
</tr>
<tr>
<td>Table II: Cases of Three Malignant Tumors</td>
</tr>
<tr>
<td>A. Skin.</td>
</tr>
<tr>
<td>B. Gastrointestinal tract (large intestine)</td>
</tr>
<tr>
<td>C. Miscellaneous.</td>
</tr>
<tr>
<td>Total</td>
</tr>
<tr>
<td>Table III: Double Carcinomas of Same Organ</td>
</tr>
<tr>
<td>A. Same system.</td>
</tr>
<tr>
<td>B. Different systems.</td>
</tr>
<tr>
<td>Total</td>
</tr>
<tr>
<td>Table IV: Double Sarcomas</td>
</tr>
<tr>
<td>A. Gastrointestinal tract.</td>
</tr>
<tr>
<td>B. Pharynx.</td>
</tr>
<tr>
<td>C. Large intestine.</td>
</tr>
<tr>
<td>Total</td>
</tr>
<tr>
<td>Table V: Double Carcinomas of Symmetrical Organs</td>
</tr>
<tr>
<td>A. Female breasts.</td>
</tr>
<tr>
<td>B. Male genitourinary tract.</td>
</tr>
<tr>
<td>C. Miscellaneous.</td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>

In order to facilitate comparison the data are presented in tabular form almost identical with that of the first series. However, slight changes and additions have been necessary since the present material does not fall into quite the same groupings as the previous material. Cases are arranged in order of increasing age. In the tables the age given for the time of development of each tumor is the age at onset of symptoms. When a precise past history was lacking the age at which the histologic diagnosis was first made is used.
This is at variance with the first series, in which the age at death was employed.

Duration is computed from the onset of symptoms of each tumor until death. Thus the difficult task of deciding when a tumor is "cured" is avoided. The interval, as given in the tables, represents the time between the onset of symptoms of successive tumors. In cases in which the malignant growth was found at autopsy but not suspected during life, the age given is that at time of death, and the interval and duration are reported as N.S. (not stated). Age, duration, and interval are recorded in terms of years.

An attempt was made in all cases to determine whether metastases had been removed during life. The sign + indicates that histologically verified metastases were excised. Cases in which lymph nodes were removed but proved negative on microscopic examination, as well as those in which assumed metastases were treated by radiation, are recorded as "no metastases removed" (− sign). An asterisk indicates that at autopsy the metastases present could be attributed to one of or all the malignant tumors.

**DISCUSSION**

The data in this series show a parallel trend to the earlier study and accentuate its conclusions. We shall enumerate a few of the main points.

The average age is slightly lower than in the previous group, probably owing to the use of age at time of death in the first series and age at onset of symptoms in the present series. The males average 65.2 years and the females 56.9 years. The considerable difference between the average ages of the male and female groups is identical in both series (9 years). The average age for the entire series is 62.5. The range in age is similar for the two groups: from 26 to 85 for the male group and from 28 to 83 for the female group.

The sex ratio in this series shows a preponderance of males (2:1:1) as against 1:1.6 in the first series. This is greater than one would expect from the male-female ratio of the entire autopsy series (1.3:1). According to the Federal census of 1930 and that of 1940 the male-female ratio for the Massachusetts population over 25 years of age is 1:1.1. The slight preponderance of females in the general population would tend to lend further significance to the large proportion of males in the multiple malignant tumor series. The difference between the average ages of the male and female groups (9 years) may partly account for this. The male group, with a greater average age than the female group, would have had more time during which multiple tumors might develop.

Reports of multiple malignant growths based on autopsies (Table XII) generally show more males than females: Burke, 2:1; Tullis, 4.2:1; Kirshbaum and Shively, 2.2:1; Bugher, 4:1. However, some series
based on surgical material indicate a slight preponderance of females. Thus, Stalker, Phillips, and Pemberton found 1:1.3; Hurt and Broders 1:1.2; and Desaive and his associates 1:1.6. On the other hand, both Gaudin and Cooper noted a definite preponderance of males (2.7:1 and 3.2:1 respectively).

In view of the wide variation in sex distribution, it is doubtful that this factor is of consequence in the incidence of multiple malignancies.

The study of contrasted synchronous and metachronous tumors might provide an approach to the further elucidation of individual susceptibility to tumor development. Unfortunately, it is not always possible to be sure that such a distinction, which is of necessity based on clinical symptoms and biopsies, corresponds to reality. Furthermore, it is difficult to know how much significance to attach to the intervals between the development of tumors. In discussing synchronous and metachronous tumors, Warren and Gates (19) stated in 1932: "There is not much difference as far as information regarding heredity goes, and indeed regarding susceptibility as well, as to whether the patient develops his two tumors five years apart, ten years apart, or practically simultaneously."

Although we have recorded the interval between tumors when obtainable, and have indicated the tumors that we believed to be synchronous, our present data do not contribute anything new. The average interval between all tumors of the series is 3.1 years, that of all tumors except those of the cases of 3 and 4 malignant neoplasms is 3.2 years. The average interval between tumors in the cases of 3 and 4 malignant growths is 2.8 years. These figures are probably abnormally high since there are several intervals ranging between 10 and 20 years. Two years would probably be a more representative interval. Desaive and his co-workers (5) found an average interval of 1.8 years in their group.

It has been suggested that multiple malignant tumors constitute an indirect measure of the degree of intensity of malignancy or of the disposition to cancer in an individual. The study of survival rates provides an approach to this relationship. Multiple malignant growths in themselves do not alter survival rates to any appreciable degree. The average duration of life for the entire series, reckoned from the onset of symptoms of the first tumor, is 2.7 years. This is close to that of the previous series and subject to the same reservations, since 2 cases of 20 and 21 years’ duration respectively, and 8 cases between 10 and 20 years bring up the average appreciably. The average duration of the cases of 3 and 4 malignant growths is 4.7 years, although this figure is too high, since there are cases of 21, 15, and 11 years’ duration. It gives further ground for the assumption that the presence of numerous malignant tumors does not necessarily imply a worse prognosis. It seems unlikely that the degree of malignancy is related to multiplicity.

On Table XIII is plotted the encounter of tumors of the various organs in the 194 cases of multiple malignant growths. No distinction is made here between carcinoma and sarcoma. Inasmuch as it was difficult to record all the tumors of Tables I and II (cases of 4 and 3 tumors, respectively), only the first two in these cases were included. This table brings out the relatively large number (36, or 18.6 per cent) of multiple tumors in the same organ (including breasts). The association of the breast and gastrointestinal tract is about equal to that of the breast and genital tract. Although neoplasms of the large intestine are frequently associated with tumors derived from other parts of the gastrointestinal tract, association with growths of other organs is almost as frequent. Tumors of the prostate are associated with a wide variety of growths by no means limited to the genitourinary tract, or even to glandular epithelium. About half of the neoplasms of the female genitourinary tract are associated with others arising from glandular epithelium common to both sexes.

Thus although there is some evidence that organ or tissue specificity with regard to the development of tumors may exist, the evidence provided by this series is not conclusive. Conversely, there is nothing that suggests an antagonism between tumors derived from different organs or tissue.

On the basis of all the tumors, the organs most frequently involved in the group of 194 multiple tumors are:

<table>
<thead>
<tr>
<th>Organ</th>
<th>Number of Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colon</td>
<td>56</td>
</tr>
<tr>
<td>Skin</td>
<td>44</td>
</tr>
<tr>
<td>Pharynx *</td>
<td>34</td>
</tr>
<tr>
<td>Stomach</td>
<td>28</td>
</tr>
<tr>
<td>Uterus (including cervix)</td>
<td>23</td>
</tr>
</tbody>
</table>

* This includes buccal cavity and pharynx.

Almost all studies of multiple malignant neoplasms show a high proportion of multiple cancers of the gastrointestinal tract. These are chiefly of the large bowel and may be related to polyposis, in which secondary malignant changes are so common. A summary of the cases with large bowel involvement may be found in Table XIV. In one-third of the cases of carcinomas of the large bowel there was a second carcinoma in this location. In 9 cases a tumor of the large bowel was associated with one in another part of the gastrointestinal tract. In 31 cases there was a tumor of the gastrointestinal tract elsewhere than in the large bowel, chiefly in the stomach.
It is interesting to note that the average age is no lower in the cases of multiple carcinomas than in cases of single carcinoma of the colon. Polyposis, often congenital, familial (21), and predisposing to cancer, no symptoms during life. Since many are in the older age groups, one might contend that the inclusion of these cases in the series gives a false impression of the clinical significance of multiple malignant neoplasms.

### Table XIII: Concordance of Multiple Malignant Tumors *

<table>
<thead>
<tr>
<th>Skin</th>
<th>Breast</th>
<th>Pharynx</th>
<th>Parotid</th>
<th>Thyroid</th>
<th>Larynx</th>
<th>Lung</th>
<th>Esophagus</th>
<th>Stomach</th>
<th>Small Intestine</th>
<th>Large Intestine</th>
<th>Liver</th>
<th>Pancreas</th>
<th>Adrenal</th>
<th>Kidney</th>
<th>Bladder</th>
<th>Prostate</th>
<th>Testis</th>
<th>Ovary</th>
<th>Uterus</th>
<th>Cervix</th>
<th>Bone</th>
<th>Granulopoietic Tissue</th>
<th>Lymphoid Tissue</th>
<th>Lymph Node</th>
<th>Subcutaneous Tissue</th>
<th>Peritoneum</th>
<th>Nerve</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>6</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

* Only the first 2 tumors of Tables I and II are included.

### Table XIV: Tumors of the Large Bowel

<table>
<thead>
<tr>
<th>Two or more malignant tumors</th>
<th>One malignant tumor</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Number</strong></td>
<td><strong>Male</strong></td>
</tr>
<tr>
<td>Number</td>
<td>17</td>
</tr>
<tr>
<td>Age range</td>
<td>42–78</td>
</tr>
<tr>
<td>Average age</td>
<td>62.6</td>
</tr>
</tbody>
</table>

is too rare to affect these statistics. The predominant male-female ratio is characteristic of carcinoma of the bowel and it is in keeping with the series.

Carcinoma of the prostate constitutes another large group. Some of these were found at autopsy and gave However, on analyzing the 52 cases in which there was a carcinoma of the prostate, one gets a different picture. Seven cases gave symptoms during life; 8 are in groups of 3 or more malignant tumors and would therefore be included in the series even if the
prostatic tumor were absent. Of the remaining 37, there are 8 in the 50 to 59 age group, in which it is reasonable to assume that the malignant prostatic growth would have given symptoms had the patient lived. We are thus left with 29 cases ranging between 60 and 90 years of age. Even if this group were excluded from the total series, the incidence of multiple malignant neoplasms would still be high (5.8 per cent instead of 6.8 per cent).

The groups of 3 and 4 primary malignant tumors constitute respectively 12 per cent and 3 per cent of the total group. This is roughly the same as the incidence of similar cases in the group collected from the literature by Warren and Gates (19). In that group the number of multiple skin cancers accounted for about one-third of the cases of 3 or more malignant growths; whereas in our present series there are 2 cases with 3 cancers of the skin (one of these is associated with a fourth tumor of a different organ) and one case of 4 cutaneous cancers. The relatively small number of multiple skin tumors in this series is probably attributable to omissions on the part of patients when giving their past history, and to the treatment of some skin lesions without biopsy.

The significance of the data on the relative frequency with which certain organs were involved depends on the sample analyzed. It is difficult to avoid a certain amount of selection of cases. Our 2,829 cases were derived from 3 hospitals of different types. The majority came from Pondville State Hospital and Westfield State Sanatorium, which tend to have a larger proportion of terminal-care patients in the older age groups. A large proportion of cases of carcinoma of prostate are in the Pondville group. The majority of cases from the C. P. Huntington Memorial Hospital were lymphomas and leukemias. The patients from the New England Deaconess Hospital were for the most part private and represent a different social stratum. Remote data on these patients were less easily verified. Also, the majority of deaths were postoperative or followed acute illness unrelated to cancer. For these reasons, comparisons of the frequency with which certain organs are involved in the main sample and in the group with multiple tumors may be of interest in judging the susceptibility to cancer of certain organs as represented in the group of cases of primary multiple tumors. In Table XV we have listed the organs most often involved.

By comparing the organs affected in the series of multiple malignant growths, and the distribution of tumors in the series as a whole (Table XV), it is clear that there is no constant ratio between organs involved in the series of one cancer and the series with 2 or more cancers, with exception of the large intestine. Although there are more than twice as many cancers of the stomach as skin in the group of single tumors, those organs are affected with equal frequency in the group of multiple cancers. Also there are more cancers of the cervix than of the stomach in the group of single tumors and only half as many in the group of multiples.

"Collision" of tumors or of metastases is infrequent. Among the 194 cases in which there was a total of 423 malignant tumors (of these 285 were present at death), 162 cancers had metastasized. There were only 3 instances of "collision tumor." These 3 cases deserve special mention since each exemplifies a variety of collision tumor, i.e., the encounter of 2 malignant

Table XV: Distribution of Cases by Site

<table>
<thead>
<tr>
<th>Organ</th>
<th>Entire autopsy series</th>
<th>Multiple malignant autopsies</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>Per cent</td>
</tr>
<tr>
<td>Large intestine</td>
<td>476</td>
<td>16.9</td>
</tr>
<tr>
<td>Uterus (including cervix)</td>
<td>311</td>
<td>11.0</td>
</tr>
<tr>
<td>Stomach</td>
<td>243</td>
<td>8.6</td>
</tr>
<tr>
<td>Pharynx</td>
<td>242</td>
<td>8.6</td>
</tr>
<tr>
<td>Breast</td>
<td>237</td>
<td>8.4</td>
</tr>
<tr>
<td>Lymph node</td>
<td>158</td>
<td>5.6</td>
</tr>
<tr>
<td>Prostate</td>
<td>135</td>
<td>4.8</td>
</tr>
<tr>
<td>Skin</td>
<td>131</td>
<td>4.6</td>
</tr>
<tr>
<td>Bladder</td>
<td>125</td>
<td>4.4</td>
</tr>
<tr>
<td>Lung</td>
<td>120</td>
<td>4.3</td>
</tr>
<tr>
<td>Leukemia</td>
<td>97</td>
<td>3.4</td>
</tr>
<tr>
<td>Esophagus</td>
<td>83</td>
<td>2.9</td>
</tr>
</tbody>
</table>
tumors or their metastases. Case 43-A-48 (Table VIII) presented the encounter of 2 primary malignant growths in their site of origin: a renal cell adenocarcinoma and a rhabdomyosarcoma, both arising in the left kidney. In case 38-A-11 (Table VII, F.) an epidermoid carcinoma of the bladder metastasized to a mucinous carcinoma of the rectum. In case 19,862 (Table II, C.) there was collision between the lung metastases of a carcinoma simplex of the breast and an adenocarcinoma of the pancreas.

The coexistence of multiple malignant tumors and benign tumors has been noted by many authors, but statistical data are not readily available. Although no attempt was made to determine the incidence of benign growths in this series, it was noted that a number of cases showed a striking number of benign tumors involving several organs and systems. Case 60,431 (Table II, C.) provides a good illustration. The patient, who was 58 years of age at the time of her death, had 3 malignant neoplasms (leiomyosarcoma of uterus with lung metastases, adenocarcinoma of ovary with numerous metastases, and lymphatic leukemia), and 5 benign tumors (adenoma of islet of Langerhans, Hürthle-cell adenoma of thyroid, leiomyoma of stomach, embryonal cyst of kidney, and hemangioma of lip).

In 1932 Wilson and Maher (22) discussed the statistical significance of the occurrence of multiple malignant growths and estimated the expected incidence to be 5 to 6 per thousand (based on the Massachusetts mortality rates for 1902, 1912, and 1920-1927, prepared by Dr. H. L. Lombard). In analyzing the first series, Warren and Gates (19) used a table set prepared by Dr. H. L. Lombard. In analyzing the present series, Warren and Gates (19) used a table set prepared by Dr. H. L. Lombard and centering at the same year as the cancer autopsy series. The expected number of multiple malignant neoplasms in the series of 1,058 cancer autopsies, on the basis of 2 years’ duration, was 10.5, whereas the actual number observed was 40.

Desaive and his co-workers (5) based their statistical studies on the population of Liége, Belgium, from 1925 to 1934. The expected incidence of multiple malignant growths was calculated to be 6 per thousand. It is noteworthy that, working with two entirely different population samples, Wilson and Desaive found almost identical figures (5 to 6, and 6 per thousand, respectively).

In the present series the observed incidence of multiple malignant tumors is 68 per thousand; on the basis of both series it is 60 per thousand. The expected incidence of multiple malignant neoplasms in our present series is 17; the observed incidence is 194, or eleven times the number expected if chance alone were a factor. This is a further confirmation of the existence in some persons of a susceptibility or predisposition to cancer.

SUMMARY

1. In a series of 2,829 cancer autopsies, 194 cases of multiple malignant neoplasms were encountered, an incidence of 6.8 per cent. Together with the series previously reported there are 3,907 autopsies with an incidence of 6.0 per cent multiple cancers.

2. In the group of 194 patients with multiple malignant tumors there are 131 males and 63 females.

3. The average age of the male group is 65.2 years, of the female group, 56.9 years, and of the entire group 62.5 years.

4. The average duration from onset of the first tumor until death is 2.7 years.

5. The average interval between successive tumors, when it could be determined, is 3.1 years.

6. Cases of multiple malignant growths occur more frequently than the expected incidence based on chance alone.

7. This greater frequency, calculated as eleven-fold, may be attributed to susceptibility or predisposition to cancer in some persons or groups of persons.

REFERENCES


15. REGAUD. Cited by Desaive et al. (5).


Multiple Primary Malignant Tumors and Susceptibility to Cancer

Shields Warren and Theodore Ehrenreich

*Cancer Res* 1944;4:554-570.

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