

CANCER OF THE LIP

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In Great Britain the lip is not a very common site for cancer but in Northern Ireland the condition continues to provide between 6.5 and 8.5 per cent of all new cases treated at the Radiotherapy Centre. Over a twelve year period 990 cases of lip cancer were registered—964 of the lower, and 25 of the upper, i.e., 2.7 per cent of the total—a figure very similar to that reported in other series. Cancer of the upper lip, it is generally agreed, differs from that of the lower lip in its aetiology, behaviour and malignancy and this review, therefore, is confined to those tumours arising in the mucous membrane or vermilion area of the lower lip.

TABLE I—CANCER OF THE LOWER LIP

	<i>New</i>	<i>Post-Op.</i>	<i>Post Radiation</i>	<i>Post 'Plaster'</i>	<i>Total</i>
<i>Male</i>	816	58	30	20	924
<i>Female</i>	35	4	1	—	40
<i>Total</i>	851	62	31	20	964

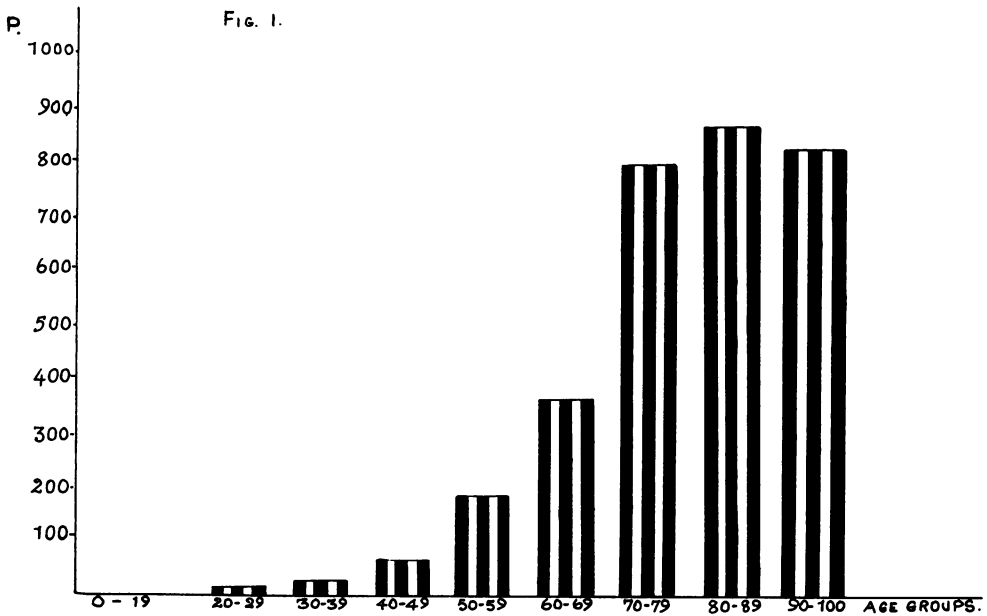
Table I confirms that it is a condition predominantly found in men—the generally accepted figure for women is between 2 and 3 per cent of the total whilst here it is slightly over 4 per cent. One hundred and thirteen patients had treatment elsewhere – radiation, surgery or 'plasters'. These so called 'plasters', made of arsenical paste, are worn by the patient for several weeks, give rise to excruciating pain and on occasions to very profuse haemorrhage. One patient had eleven 'plasters' in all applied at various times and it is interesting to note that the pathologist reporting on the section stated that it showed 'radiation changes'! Traffic was not altogether one way, however, for the records show that six patients after receiving radiation treatment, made doubly sure by subsequently having 'plasters' applied!

TABLE II—AGE INCIDENCE

<i>Age</i>	20–29	30–39	40–49	50–59	60–69	70–79	80–89	90–100	<i>Total</i>
<i>Men</i>	4	16	73	179	249	295	102	6	924
<i>Women</i>	—	1	4	3	6	15	10	1	40
<i>Total</i>	4	17	77	182	255	310	112	7	964
<i>Per cent</i>	0.4	1.8	8.0	18.9	26.5	32.2	11.6	0.7	100

It is generally accepted that cancer of the lip is a disease of old age (Table II). It rarely occurs under the age of 40 and is most unusual under the age of 30. The youngest patient referred was a male, aged 25, a colonial officer on home leave. He had a small lesion treated by surgery. Ackerman and del Regato (1962) quote a series of 1,618 patients where the highest percentage occurs in the fifties. Dick

(1962) reporting on 328 patients in Canada states that it is most common in the sixties and a similar pattern was found by Judd (1949). In the present series about 90 per cent of the cases occurred after the age of 50 and the highest percentage, 32, was found in the seventies. This apparent late development of the condition in Northern Ireland, as compared with other countries, could possibly be of significance when the aetiology is considered. A more accurate picture of the actual incidence in relation to age is given in Figure I where account is taken of the percentage of population in each age group.



The histogram illustrates how rare it is before the age of 40 and demonstrates that the liability to develop the condition doubles with every decade from 40 to 70 years of age. The picture for women is almost identical with the condition occurring, perhaps, a little later than in men.

CLINICAL EVOLUTION

Table III suggests that by far the most common initial or presenting symptom is ulceration—37.8 per cent.

TABLE III—INITIAL SIGNS OR SYMPTOMS IN 964 CASES

	<i>Number</i>	<i>Per cent</i>		<i>Number</i>	<i>Per cent</i>
Lump	63	6.5	Burn	10	1.0
Ulcer	364	37.8	Sore	65	6.7
Crust	117	12.1	Crack	29	3.0
Pimple	42	4.4	White Patch	15	1.6
Blister	25	2.6	Other	234	24.3

When the patient actually attends for treatment the history may be as follows :

1. An ulcer developing de novo.
2. An ulcer appearing on a previously existing swelling or nodule.
3. Superficial crusting with perhaps minimal ulceration on an area previously subject to periodic crusting and healing.
4. The persistent and gradual increase in size of a keratotic nodule.

TABLE IV—DURATION OF SYMPTOMS

	3/12	6/12	9/12	1 yr.	1½ yrs.	2 yrs.	2+ yrs.	Ind.	Total
<i>Men</i>	272	210	79	118	36	51	107	51	924
<i>Women</i>	12	11	3	5	3	2	0	4	40
<i>Total</i>	284	221	82	123	39	53	107	55	964

As a general rule cancer of the lip develops slowly (Table IV) but it is surprising to find a delay of six months or more in cases in view of the lesion's rather prominent and obvious location. Those patients where the lesion develops de novo probably account for cases reporting in the first few months of onset, whilst it is probably true that malignancy occurring on long-standing pre-cancerous conditions accounts for the very great delay in other cases. In the present series some 16 per cent of all patients delayed two years or more before seeking medical attention but this figure, in fact, is not dissimilar to that given in other reports.

CLINICAL STAGES

The cases are staged according to the system whereby Stages I and II describe the length of the primary lesion, Stage III the position when mobile lymph nodes are present, and Stage IV when there is fixation of nodes, an extensive primary or where there are distant metastases, which is extremely rare. Seventy-five per cent of the patients seen presented with a primary lesion 2cm. or less and only in 4 per cent was the lip tumour over 4cm. in length.

The actual percentage of patients presenting in the later stages of the disease i.e. Stages III and IV compares favourably with figures from other series.

TABLE V—CLINICAL STAGES

<i>Stage</i>	1	2	3	4	<i>Ind.</i>	<i>Total</i>
<i>Men</i>	756	79	16	64	9	924
<i>Women</i>	26	4	9	0	1	40
<i>Total</i>	782	83	25	64	10	964

INCIDENCE OF SECONDARY NODES

There is a great variation in the reported incidence of involved lymph nodes in cancer of the lip. Some reports, Dick (1962) and Martin (1935) suggest that it only occurs in about 3.5 per cent of cases whilst others, Bhansali (1961) and Simmons and Daland (1962) report that cervical metastases are present in 20-25 per cent.

Five hundred and ninety-two cases are available for five year assessment and Table VI indicates that 37 patients out of this number i.e. 6.3 per cent presented

TABLE VI—INCIDENCE OF SECONDARY NODES
(592 patients)

<i>Number</i>	<i>Present</i>	3/12	6/12	9/12	1 yr.	2 yr.	3 yr.	4 yr.	5 yr.
	37	6	8	6	10	7	4	—	3

with lymph glands already involved. In the succeeding 5 year period, 44 patients or 8 per cent developed nodes and it is interesting to note that in 37 of these patients i.e. 84 per cent the nodes appeared within two years of treatment. The incidence of secondary nodes must obviously depend upon the duration of symptoms, the extent of the primary lesion as well as the relative degree of differentiation of the tumour, but I doubt if prophylactic dissection, as suggested by some, would offer sufficient added benefit to compensate for the effort and the operative risk involved. This would be particularly relevant here in Northern Ireland where so many of the patients are aged seventy and over.

TREATMENT

Cancer of the lower lip may be treated by surgery or radiotherapy, the choice of treatment depending upon such factors as extent of the primary, the degree of differentiation of the tumour, the presence of enlarged regional lymph nodes, the patient's age, general condition, etc. Here I will refer only to radiotherapeutic methods and Table VII illustrates some of the more common techniques in use at the Northern Ireland Radiotherapy Centre.

Many of our patients with small tumours are treated by means of a single exposure of superficial or medium voltage x-rays – the mouth and jaw being protected by a 2mm. thick lead sheet placed inside the lower lip. This is not a treatment method one would necessarily recommend but it is a reasonable compromise taking into account the age of many of our patients, the distances involved and the extreme reluctance to enter or even attend hospital. If the lesion is more bulky and extensive then we treat by deep x-ray therapy, fractionating the course of treatment and again using lead to protect the mouth, jaw and normal tissues. Radium is being used less and less in the treatment of lip cancer for it is probably difficult to justify the added exposure of staff to radiation when equally good results can be obtained by other simpler methods. We feel, however, that the double radium or cobalt mould gives a slightly better cosmetic result and it is, therefore, still used in selected cases especially in the younger patient. Recurrences following radiation are treated by surgical excision. If mobile glands are present

TABLE VII—TREATMENT BY RADIOTHERAPY

(1) Superficial or medium Voltage (140 KV)	Single treatment		2000r–2250r
	Fractionated	5 days	3250r–3500r
(2) Deep V-ray Therapy (300 KV)	Fractionated	8 days	4250r–4500r
		15 days	5000r–5500r
(3) Radium Mould Implant – Radium needles or Gold Seeds		8 days	6000r–6750r
		7 days	6000r–6500r

when the patient is seen or appear after treatment then radical block dissection is indicated. If the glands are fixed and surgery is not possible palliative radiation therapy may be tried, either in the form of external deep x-ray therapy or as a small radium or radon seed implant directly into the involved nodes.

PROGNOSIS AND RESULTS OF TREATMENT

The main factors probably influencing the prognosis are :

1. The length of the primary lesion.
2. Previous therapy whether by surgery, diathermy or radiation.
3. The degree of differentiation of the tumour.
4. The presence of lymph nodes.

It is, however, generally accepted that when the disease is detected in the early stages treatment whether by surgery or radiotherapy should result in a cure rate of between 90 and 95 per cent. It is sometimes not easy to compare results because of the failure in reports to differentiate between crude and corrected survival rates but as mentioned earlier over 70 per cent of our patients were over sixty years of age and this is certainly reflected in the high proportion of patients dying from other causes in the five year period following treatment. The overall corrected survival rate for this particular series is 87 per cent and Table VIII illustrates clearly how the prognosis is influenced by the stage in which treatment is initiated.

TABLE VIII—FIVE YEAR RESULTS

<i>Stage</i>	<i>Number treated</i>	<i>Number alive</i>	<i>Died from intercurrent disease</i>	<i>Died from disease</i>
1.	478	361 (75.5%)	92 (19.2%)	25 (5.2%)
2.	54	36 (66%)	12 (22.2%)	6 (11.1%)
3.	13	6 (46%)	1 (7.7%)	6 (46.2%)
4.	46	11 (24%)	4 (8.7%)	31 (67%)
Indef.	1	—	1	—
Total	592	414 (70%)	110 (18.6%)	68 (11.4%)

It is sobering to reflect on the fact that 68 patients out of 592 or about 12 per cent. actually died from the disease, and the mode of death from lip cancer is such that every effort should be made to initiate treatment at as early a stage as possible. Although many of our patients are old, and travel to clinics is not always easy, we feel that close follow-up is necessary, particularly in the two year period following initial treatment in order to detect secondary nodes at a stage when they are still operable and curable.

AETIOLOGY OF LIP CANCER

Numerous factors have been suspected of playing a part in the development of lip cancer.

These are listed in Table IX but it has been generally accepted that the most important factor in the production of lip cancer is long standing exposure to sunlight. Tobacco, particularly in the form of pipe smoking, may have an association but clearly to a very much lesser degree. Both intensity and chronicity of

TABLE IX

Tobacco
 Alcohol
 Syphilis
 Nutritional deficiencies
 Sunlight
 Miscellaneous factors such as heat, trauma, dental irritation, etc.

exposure to sunlight are probably involved, the latter appearing to be of more importance here in Northern Ireland where the highest percentage of cases occurs in the seventy age group. It is certainly a condition most often found in out of door workers, occurring predominantly in rural areas and division and distribution of our cases on a geographical basis would appear to confirm this.

Table X illustrates the fact that Belfast with about 30 per cent of the population provides less than 11 per cent of the cases referred. Almost 33 per cent of the patients, on the other hand, live in Tyrone and Fermanagh although the combined

TABLE X—GEOGRAPHICAL DISTRIBUTION

	<i>Belfast</i>	<i>Antrim</i>	<i>Down</i>	<i>Armagh</i>	<i>F'managh</i>	<i>Tyrone</i>	<i>L'derry</i>	<i>Other</i>
No. of cases	105	167	180	110	100	210	89	3
Percentage	10.9	17.3	18.7	11.4	10.4	21.8	9.2	0.3
Population (thousands)	416	274	267	117	51	134	165	—
Percentage of total population	29.2	19.2	18.7	8.2	3.1	9.4	11.6	—

population of these counties represents only 12.5 per cent of the total for the province. These figures would indicate that those people living in the western counties are about eight times more liable to develop cancer of the lip than people living in Belfast.

Finally if chronic exposure to sunlight over a long period is the most important factor then one might reasonably expect to see a somewhat similar pattern in the incidence of skin cancer where studies have confirmed the existence of a casual relation between excessive occupational and environmental exposures to sunlight and the incidence of cancer of exposed skin. One thousand cases of skin cancer

TABLE XI—SKIN CANCER
 1,000 Cases (570 men, 430 women)

<i>Belfast</i>	<i>Antrim</i>	<i>Down</i>	<i>Armagh</i>	<i>Fermanagh</i>	<i>Tyrone</i>	<i>L'derry</i>
330	114	193	93	44	126	100
33.0%	11.4%	19.3%	9.3%	4.4%	12.6%	10.0%
<i>Percentage of Total Population</i>						
29.2	19.2	18.7	8.2	3.6	9.4	11.6

registered at the Centre were chosen at random and Table XI illustrates that this actually is not the case.

It can be seen that, although skin cancer is more common in men the difference is nothing like that for cancer of the lip where women make up less than 5 per cent of the total cases registered. In addition the division of skin cancer cases on a geographical basis follows broadly the general distribution of population.

In view of this one might reasonably suggest that, although sunlight may be the main factor in the aetiology of lip cancer in other countries this need not necessarily apply in Northern Ireland. It is a fact that the condition continues to be a fairly common neoplasm in this country and full investigation of all aspects of the problem might yield useful information on what many people believe is a preventable form of cancer.

SUMMARY

Nine hundred and sixty four cases of cancer of the lower lip registered at the Radiotherapy Centre are reviewed with particular reference to the age incidence, clinical evolution and incidence of secondary nodes. The importance of close follow-up in the two year period following treatment is emphasized. Treatment by radiation is described briefly and the main factors influencing the prognosis and results of treatment are discussed. The numerous factors suspected of playing a part in the development of lip cancer are mentioned with particular reference to Northern Ireland where the condition continues to remain a common form of cancer.

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REFERENCES

- ACKERMAN, L. V. and DEL REGATO, J. A. (1962). Carcinoma of the lower lip. *Cancer*, 3rd edition. St. Louis, Mosby.
- BHANSALI, S. K. (1961). Malignant tumours of the buccal cavity. A clinical analysis of 970 cases. *Clinical Radiology*, **13**, 299.
- DICK, DONALD A. L. (1962). Clinical and cosmetic results in squamous cancer of the lip treated by 140 KV radiation therapy. *Clinical Radiology*, **13**, 304.
- JUDD, E. W. and BEAHR, O. H. (1949). Epithelioma of the lower lip. *Arch. Surgery*, **59**, 422.
- MARTIN, H. E. (1935). Treatment of cancer of the lip. *Am. J. Surgery*, **30**, 215.
- SIMMONS, C. C. and DALAND, E. M. (1962). The results of operation for cancer of the lip. *Surg. Gynec. Obstet.* **35**, 766.