Metastatic Spinal Cord Tumours

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Summary

In this report 84 patients who had surgical intervention for metastatic spinal cord tumours are presented. The primary tumours were mainly from lungs, breast or of haematological origin, and were commonest in the thoracic region. In all but 2 patients laminectomy was performed. Surgical decompression permitted diagnosis, and there was neurological improvement in nearly half of the patients.

Key words: Metastatic tumours; Spinal cord; Laminectomy; Anterior fusion.

In approximately 5% of patients with cancer, spinal cord metastasis occurs (Barron, 1959). The treatment of such metastases is still under discussion.

In this report 84 patients who had surgical intervention for metastatic spinal cord tumours are presented.

Result

Sixty four per cent were male and 36% female. In Figure 1 the age distribution is presented; 64% of the cases were over 40 years old.

On admission to the Neurosurgery Department 40% had severe pain. Nineteen per cent had urinary incontinence. Fourteen per cent had paraplegia, 16% had severe paraparesis and the other patients had moderate or mild paraparesis. Two patients were neurologically normal. In 13% the primary tumour was known preoperatively and these patients had been treated in other departments and underwent surgical decompression.

The neuroradiological changes are summarised in Table I. Plain radiographs revealed pathology in 47%. The localisation of the tumours was: 43 in the thoracic region, 31 in the lumbar region and 10 in the cervical region. The operative findings are summarised in Table II. Twenty eight patients had a one-level laminectomy, 33% a three-level laminectomy. In 96% epidural masses were found, and in 18% large tumours extending to the soft tissues were found.

Figure 1 Distribution according to age.

Table I Neuroradiological findings

Findings	No. of Cases $\%_n$	
<i>Plain X ray</i>		
Vertebral body depression fr.		
Pedicle or/and lamina fracture	25	29
<i>Myelography</i>		
Total block	14	17
Partial block	65	77
	19	23

Table II Operation findings

Findings	No. of Cases %	
Anterior mass	15	16
Lateral mass	27	32
Posterior mass	26	29
One level	24	28
Two levels	17	20
Three levels	28	33
More than three	15	17
Extradural mass	81	96
Intradural mass	3	4
Extension to soft tissues	16	18
Anterior fusion	2	3

The primary sites of tumours are presented in Table III. Five patients died in post-operative period. Six patients had neurological deterioration, 39% were Grade 1, 33% Grade 2, and 14% had Grade 3 improvement. Grade 1 indicates slight improvement plus decrease in pain; Grade 2 indicates moderate improvement plus no pain; Grade 3 indicates full recovery.

Table III Primary site of tumour

	No. of Cases	%
Lung	23	27
Breast	12	13
Hematological*	18	21
GIS	8	9
Prostate gl.	8	9
Unknown	8	9
Parotis gl.	2	3
Melanoma	2	3
Testis	1	1.2
Arachnoidal sarcoma	1	1.2
Surrenal gl.	1	1.2

* Including lymphoma, myeloma, leukemia

Figure 2 Neurological improvement according to tumour type. W: Worsened, H: Haematological tumours, B: Breast carcinomas, L: Lung carcinomas, U: Unknown originated metastatic tumour, P: Prostate carcinomas, G: Gastrointestinal system malignancies.

Table IV Additional Therapy following surgery (no. of Cases)

	ChT	RT	ChT + RT
Worsened	—	1	1
Gr 1	11	3	7
Gr 2	7	9	12
Gr 3	1	1	10

ChT: Chemotherapy

RT: Radiotherapy

Figure 2 shows neurological improvement related to the primary tumour type and the result of therapy. Better results with haematological and breast carcinomas occurred in contrast to lung and prostate neoplasia. Table IV indicates those who had chemotherapy and or radiotherapy in addition to surgery. In Table V survival time is shown. The last examination dates were taken into consideration as the survival time. There were two exceptions. One patient who was treated for Hodgkin lymphoma and showed Grade 3 improvement, died 5 years later from heart failure, and another patient with a reticulum cell sarcoma Stage II died from intracranial metastases 2 years later.

Table V Approximate survival time (in months)

	Minimum	Average	Maximum
Worsened	1	2.5	6
Gr 1	1	3.4	10
Gr 2	1	6.2	24
Gr 3	3	24	60

Discussion

The incidence of metastatic spinal cord tumours among spinal cord tumours was reported to be 13 to 20% (Torma, 1957), in our series it was 11%.

The management of metastatic spinal cord tumours is influenced by several factors. Nature of the primary tumour, site of the metastasis, general status of the patient, and the neurological status before treatment are the main factors (Barron, 1959; Constans, 1983; Barcena, 1984; Pedersen, 1984; Grem, 1985; Hartman, 1986).

The aim of surgery is to decompress the spinal cord and nerve roots (Constans, 1983). In cases during or after radiotherapy when neurological deterioration occurs surgery must be performed (Siegal, 1985). This occurred in 13% of the patients.

Metastatic cord tumours are pathologies which localise mainly in the thoracic regions (Constans, 1983) and cause neurological deterioration due to vertebral body collapse (Harrington, 1984; Siegal, 1985).

Decompressive laminectomy is the main method for surgical intervention (Sunderesan, 1985); usually 3 laminae. In 28% of our cases only one-level laminectomy was performed. In 2 patients anterior cervical body resection and fusion was performed. In the other 22 cases one-level laminectomy was done for tumours in the lower lumbar region; and one-level laminectomy was sufficient.

The type of primary tumour influenced the success of therapy.

The real survival time was not known because of the wide patient population from all parts of the country. Sixteen of our patients did not receive either chemotherapy or radiotherapy. These were the patients with post-operative neurological deterioration or showed Grade 1 improvement. Most of them left hospital refusing the entire treatment.

Decompressive laminectomy has two main disadvantages (Sunderesan, 1985; Siegal, 1985). It is not quite effective in anteriorly located tumours and may cause increased spinal instability. Recent reports advise anterior cord decompression plus spinal fusion with acrylic and metal instruments especially in anterior located tumours (Sunderesan, 1985; Harrington, 1984; Siegal, 1985; Overby, 1985). We had only 2 cases who had an anterior decompression and anterior bony fusion.

In conclusion we state that it is very difficult to have strict rules for the treatment of such patients, each must be handled individually.

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