ESTIMATING THE ANNUAL INCIDENCE OF TUMOURS OF THE VERTEBRAL COLUMN, SACRUM, COCCYX AND BASE OF SKULL IN ENGLAND

West Midlands Cancer Intelligence Unit

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Abstract: The annual incidence of tumours of the vertebral column (including the sacrum and base of the skull) had not been estimated nationally. Proton therapy may represent the best treatment for these patients, as surgical removal of these tumours can be difficult due to the importance of preserving the bony structure of the spine as well as gaining access to the lump. Currently, UK patients receiving proton therapy must travel abroad. Development of a UK proton therapy centre would be an ambitious and expensive project. A robust estimate of the potential caseload is essential to justify the need for a UK centre.

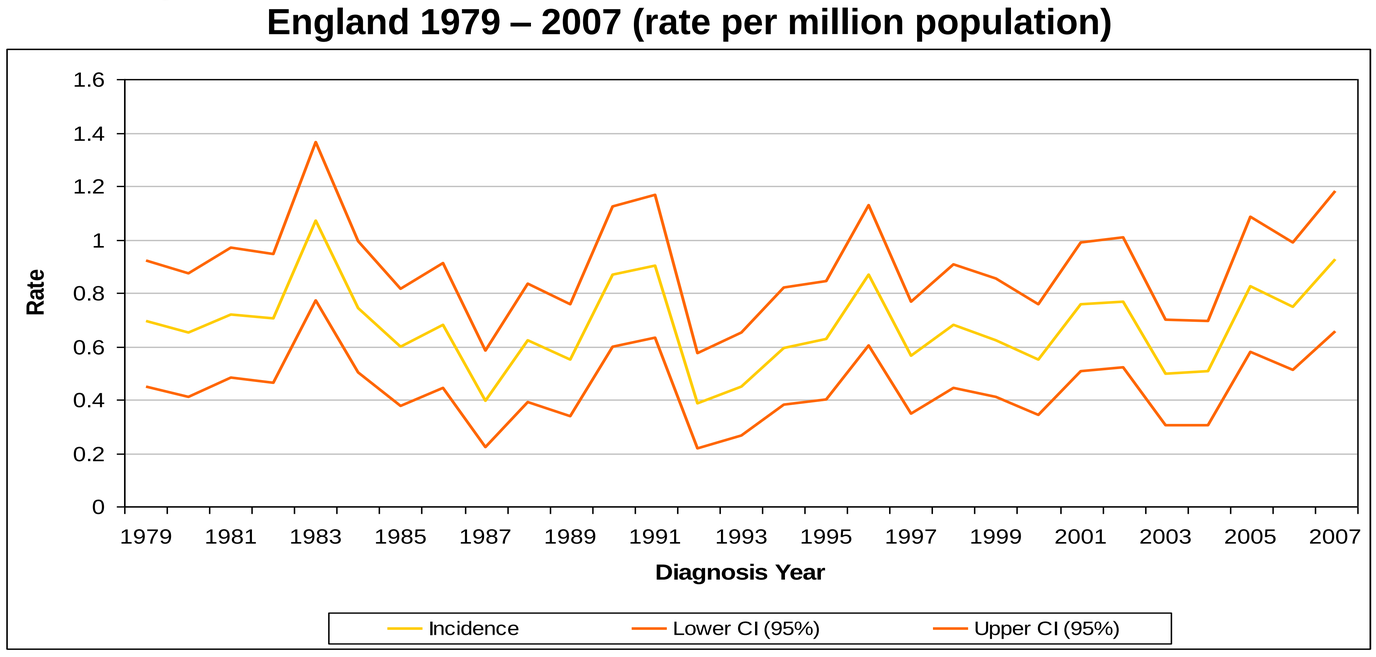
Method:
With existing coding practice using ICD-10, it is impossible to measure precisely how many patients would benefit from proton therapy, as base of skull and sacral tumours are coded to larger sites, the skull and the pelvis. A study of records held by the West Midlands Cancer Intelligence Unit identified the percentage of cases of tumours of the skull and pelvis which occurred in the relevant sub-sites (by morphology). These percentages were extrapolated to all cases registered in England.

Table 2 shows the number of records checked on the West Midlands Cancer Intelligence database and the proportion of each morphology which were found to exist in a specific site. Only chordomas were found to exist solely within the sacrum and coccyx. A small proportion of Ewings sarcoma (7%) and chondrosarcomas (24%) were found in the sacrum and coccyx area. There were no osteosarcomas found in either area.

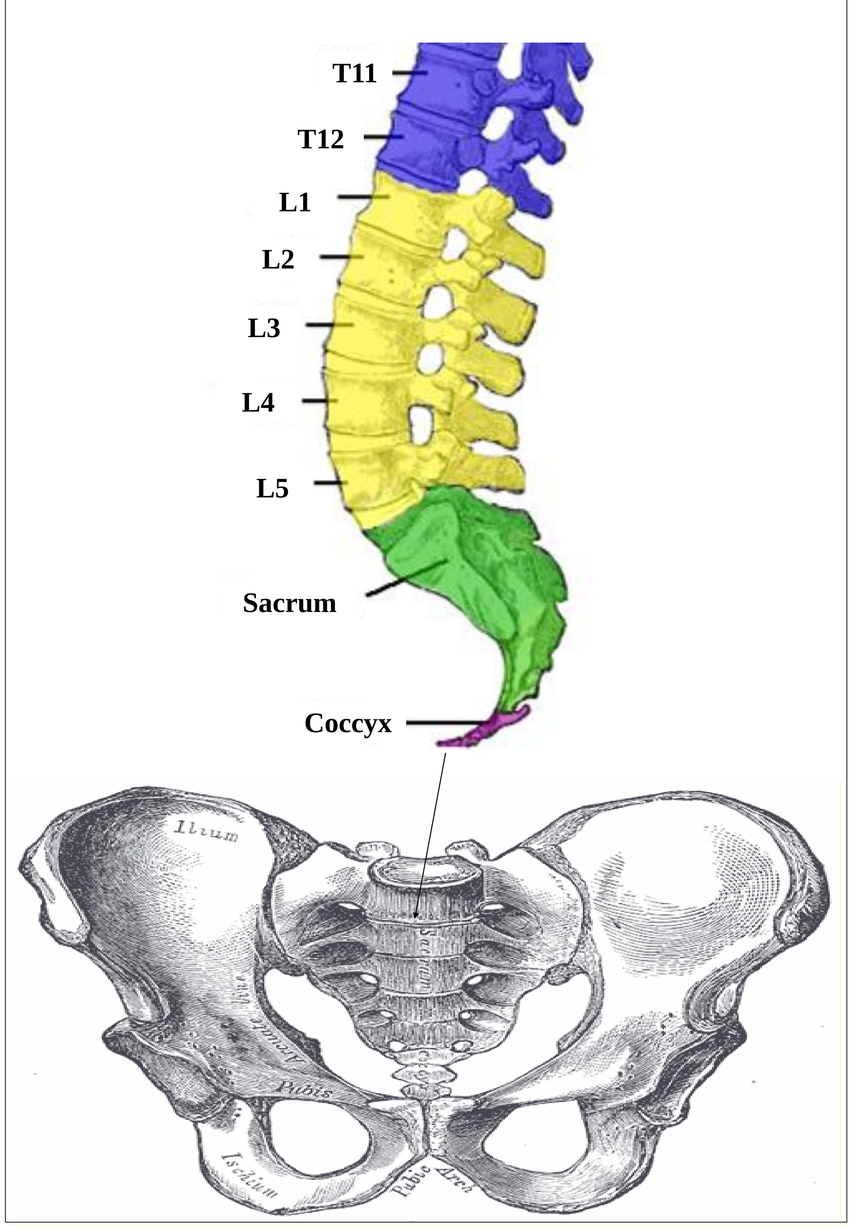
Table 2: West Midlands cases by sub-site and morphology

Morphology code	Description	Other	Pelvis	Sacrum	Grand Total	% relevant site
91863	Central osteosarcoma		1		1	**0%**
91013	Chondroblastic osteosarcoma			1	1	**100%**
92203	Chondrosarcoma	2	8	3	13	**23%**
93703	Chordoma			6	6	**100%**
92603	Ewing sarcoma		13	1	14	**7%**
91823	Fibroblastic osteosarcoma		1		1	**0%**
91803	Osteosarcoma	2	10		12	**0%**
91843	Osteosarcoma in Paget disease			1	1	**100%**
	Grand Total	**4**	**33**	**12**	**49**	**25%**

Figure 1: Crude incidence rate of tumours of the vertebral column England 1979 – 2007 (rate per million population)



Picture 1: Location of the sacrum and coccyx



Base of skull tumours:
The same methodology was applied to base of skull tumours. All sarcomas coded to C410 on the WMCIU database were identified and their pathology reports analysed to identify sub-sites.

This analysis found that all chordomas (M9370/3) were base of skull tumours. Chordomas were not coded to any other part of the skull and no other morphology was found at the base of the skull.

Results: The national cancer dataset was queried to identify all tumours of the vertebral column, skull, and pelvis. An estimate of tumours of the base of skull and sacrum was produced by applying the site and morphology specific estimates from Table 2.

There are approximately 16 tumours of the vertebral column, 16 tumours of the sacrum or coccyx, and 5 tumours of the base of the skull diagnosed annually in England. Thus, the crude rate fluctuates around 0.6 cases per million population. The majority of these tumours are chordomas or chondrosarcomas. Therefore, in total we can estimate that around 38 tumours are diagnosed in the vertebral column, sacrum and base of skull in total on an annual basis.

Conclusion: National cancer registry data allow estimates of the incidence rates of very rare tumours. However, the true incidence rate cannot be known if the coding systems used do not record sufficient detail in the site code of the tumours.

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