
**CT Guided Surface
Localization Of Brain
Tumours**

Mohammad Tariq*
and
James Kellerman*,
Old Church Hospital,
Romford, U.K.

Abstract

Exact localization of intracranial tumours is an essential step in any neurosurgical procedure. Many attempts have been made to localize the brain tumours on the scalp. Accurate localization can be achieved with CT guided stereotactic frames, but are not always available nor simple to use. We describe a simple and accurate method to localize brain tumours using a surface marker with the aid of CT scan. The method is simple, safe and requires no specialised equipment.

KEY WORDS. Brain tumours, Surface marker, CT scan.

Introduction

The accurate localization of brain tumours has always been a crucial part of neurosurgical procedures for the correct approach and minimum adequate craniotomy. CT guided stereotaxy represents the most accurate way of localizing deep seated tumours. Nevertheless, it is a time consuming procedure and is sometimes cumbersome to use on surface tumours, particularly if you wish to proceed to craniotomy. Our method would be appropriate to any person possessing a CT scanner regardless of its type or its age. It is not necessary to do scout views or to have index lines.

Method and Material

Patients were chosen with a variety of tumours in which it was planned to either do a burrhole biopsy, or an excision biopsy. It is most suited for superficial tumours.

* Department of Neurosurgery, Old Church Hospital, Romford, U.K.

A small disc of aluminium was used as a surface marker. We used the aluminium sealing tops from Urografin contrast medium (fig. 1).

The procedure is simple in the extreme. The patient is placed in the scanner. A scan is carried out in the usual way. The slice to be marked is selected. The scanner table is adjusted to the same slice level. The position lights are turned on. The position lights will be passing over the scalp at the tumour site. The patient's head and selected CT scan slice are divided in three equal parts: anterior, middle and posterior portions. The marker is placed on the corresponding division on the scalp surface in the line of position lights (fig. 2). A single slice is taken. It will show the tumour and the marker. It is usually in the correct place but the marker can be moved accordingly forward or backward. Another slice is taken at the same level until the marker is in the desired position (fig. 3).

Usually the axial scans are sufficient but lesions near the vertex and occipital region are localized by positioning the patient for coronal sections.

Discussion

This method is highly effective and gives consistently good results. The marker does not produce artefacts. The skin surface is marked with indelible ink beneath the marker. The patient is returned to the ward to wait surgery at a suitable time. It is, therefore, possible to localize tumours in several patients and to biopsy them on one list.

It can be used by all levels of neurosurgical or radiological expertise and by its very nature is fail-safe. The time taken by this technique varies from 10 to 20 minutes.

Conclusion

This a fast, safe and cost effective method of localizing brain tumours on the scalp. It does not commit you to operating on the same day. It is certainly accurate enough for most superficial tumour biopsies and craniotomies.

Acknowledgement

We acknowledge the Urografin manufacturers for photographing the contrast bottle.

References

1. Moseley, J.I., Giannotta, S.L., Renaudin, J.W.; (1980). *Journal of Neurosurgery*. A simple, inexpensive technique for accurate mass localization by computerized tomography. 52 (5): 733-5.
2. Penning, L.; (1987). *Journal of Neurosurgery*. CT localization of a convexity brain tumour on the scalp. 66 (3): 474-6.
3. Constantini, S., Pomeranz, S. and Gomori, J.M.; (1987). *Journal of Neurosurgery*. CT localization of brain tumour. (5): 787-8.