Cisternal myelography using Conray

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SUMMARY Conray-280 (meglumine iothalamate) can be injected safely into the cisterna magna in the human. In this series of 46 patients no complications were encountered attributable to the irritant effects of Conray. Satisfactory radiographic visualization was obtained in 87% of cases using 5 ml. 50% solution of Conray-280 enabling clear delineation of the anterior and posterior borders of the spinal cord to be made.

Since Campbell et al. (1964) reported on the use of Conray (meglumine iothalamate) for ventriculography and myelography there have been several publications on this subject (Heimburger et al., 1966; Davis et al., 1968; Handa and Handa, 1969; Isamat et al., 1970; Praestholm and Lester, 1970; Dinakar and Rao, 1971; Occleshaw and Holyland, 1971). Apart from scattered references (Hitchcock, 1970a, b), there have been no reports on cisternal myelography using Conray.

The possible reason for workers not favouring Conray for cisternal injection may be the fear of precipitating muscular spasms or epilepsy. The most severe complication in the report of Campbell et al. (1964) followed cisternal injection of Conray, with the patient on the left side. Headache developed toward the end of injection.

![Cisternal myelogram showing Conray demonstrating the anterior (a) and posterior (b) borders of the cord.](image)
followed by vomiting and seizures lasting for six hours. This patient, however, returned to his regular work with no residual deficits. Severe muscular spasms in the lower limbs have been reported on lumbar injection of Conray (Campbell et al., 1964; Davis et al., 1968; Praestholm and Lester, 1970). These were considered to be due to the irritative effects of Conray upon the spinal cord and therefore measures were taken to prevent the ascent of the contrast medium to the level of the conus medullaris, such as letting the patient sit up for about six hours after the procedure. Despite these reports cisternal myelography with Conray is not accompanied by any adverse reactions.

METHODS
Cisternal myelography using 50% solution of Conray-280 has been performed in 46 patients since November 1968 during stereotactic operations upon the cervical spinal cord and medulla oblongata. The age of the patients ranged from 37 to 79 years, the majority (41 patients) being 50 years or above. Most of them were undergoing pain-relieving surgery for intractable pain due to metastatic carcinoma (37) and a few for diverse conditions like postherpetic (four) and trigeminal (three) neuralgias, phantom limb pain (one), and causalgia (one).

The procedure is carried out under local anaesthesia. Cisternal puncture is done in the usual manner, with the patient sitting and with the neck flexed and rigidly fixed in the stereotaxic frame. The usual amount injected is 5 ml. Conray-280 diluted with an equal amount of CSF to constitute a 50% solution—that is, a 30% solution of meglumine iothalamate containing 14% iodine.

RESULTS AND DISCUSSION
A useful degree of radiographic visualization enabling the delineation of the anterior and posterior surfaces of the spinal cord (Figure) was obtained in 40 cases (87% of the series) and the opacification in the remainder was poor. The demonstration of the anterior and posterior borders and the sagittal diameter of the spinal cord provides a more reliable basis for determining the cord coordinates than the identification of dentate ligaments (Mullan, 1971).

There have been no specific complications attributable to Conray such as epilepsy or muscular spasms in this series. This is specially significant, since most of the patients were old and were in poor general condition suffering from advanced malignancy.

The apparent innocuousness of Conray when injected into the cisterna magna by this technique may be due to its dilution before injection and its further dilution before its circulation along pathways for cerebrospinal fluid and contact with the conducting or cellular elements of the nervous system.

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