Irradiation of control C57B1/10 mouse muscles slightly diminished their growth but did not affect their histological appearance.

Exposure of mdx muscles to irradiation greatly reduced their rate of growth and abolished histological signs of muscle fibre regeneration. Surviving muscle fibres became progressively interspersed by fibrous and fatty connective tissue, a feature of DMD muscle. These changes were not evident in identically treated non-myopathic muscle.

Thus, differences between the mdx and DMD myopathies are partially attributable to the high regenerative capacity of mouse skeletal muscle: inhibition of this regeneration in the mdx mouse yields a valuable experimental model of DMD. These findings highlight the difficulty, in animal models of human disease, of determining whether any difference lies in the primary lesion or in the species-specific reaction to that primary lesion.


An experimental set-up has been developed for measuring reaction forces on the foot. Seven vertical and three horizontal forces can be simultaneously measured. The foot is loaded with a vertical force whereas inversion of the foot is evoked by applying a moment about a vertical axis to the lower leg and/or simulating isometric as well as isotonic muscle forces. The magnitude of the input moment changes during inversion. These changes are recorded and the resulting moment–rotation angle curve is specific for the tarsal mechanism under study. A similar curve is found if muscular forces with an inversion effect are simulated. Different muscles, however, may modify the moment–rotation angle curves in a different way. These modifications reflect the mechanical effectiveness of the muscles concerned as invertors or evertors. In this way the anterior tibialis, posterior tibialis and peroneus longus muscles have been compared. Preliminary analysis of the force data (1) showed the occurrence of preconditioning phenomena in the moment–rotation angle curve during repeated inversion of the foot; (2) revealed the amount of relaxation in the statically loaded long tendons of the three muscles compared; and (3) demonstrated the mechanical effectiveness of the three above-mentioned lower leg muscles during inversion and eversion of the foot. Under the experimental conditions of the measuring set-up the tibialis anterior muscle proved to be a poor invertor, whereas the tibialis posterior muscle had a powerful inversion effect and the peroneus longus muscle illustrated its eversion effect. The experimental set-up may quantify the mechanical effects of tendon transfer in orthopaedic surgery.

31. Evidence that dendrites of hamster geniculate neurons establish contact with retinal axons in the optic tract at the time and at the site of emission of retinogeniculate branches. By P. G. Bhide, A. R. Lieberman and D. O. Frost*. Department of Anatomy, University College London, and *Section of Neuroanatomy, Yale University (Fig. 4)

Retinal axons reach the superior colliculus (SC) by embryonic day 12 (E12). En route they pass over the surface to the diencephalon, but not until E14 or later do branches emerge, to enter diencephalic nuclei such as the dorsal lateral geniculate nucleus (dLGN). It is not known what induces these axons to branch, but we have shown previously that the branching period coincides with the appearance in the optic tract, close to branch sites, of transient synaptic contacts between retinal axons and dendritic invaginations thereof (Bhide et al. J. Anat. 152, 1987). Here we demonstrate the probable nature and source of the invaginating dendrites.

Brains were removed from hamster pups between birth (P0) and P21 and a slab of diencephalon placed in oxygenated Ringer. A small deposit of HRP was placed in the dLGN by stabbing its lateral surface with a micropipette coated with HRP. Two to five hours later the tissue was fixed and Vibratome sections (c. 100 μm) processed for LM and EM-HRP histochemistry using DAB as chromogen.

Most neurons within the site of HRP deposition and individual or small clusters of neurons at its periphery were heavily labelled with HRP: many were very completely visualised. In the early postnatal period laterally directed dendrites of cells with somata located at variable depths within dLGN commonly entered and terminated within the optic tract: these cells resembled immature projection cells (Fig. 4; OT = optic tract). The extension of labelled dendrites into the optic tract has been confirmed by EM.

Thus processes of immature geniculate relay neurons establish precocious synaptic contact with retinocollicular axons coursing through the overlying optic tract, at the time at which, and close