

have, however, been caused by splint pressure exerted on the forearm alone, and that only for a few hours.

*Pathology:* Surgeons who have examined the contracted muscles all agree that they are firm, pale, and fibroid. Microscopic sections of portions of muscles removed also confirm this, showing a diffuse fibrosis. It is not likely this fibroid condition is secondary to nerve injury, because the flaccid type of paralysis does not precede contraction, as it always does in nerve lesions. There are rarely any changes in the electrical reactions of the nerves or any action of degeneration in the contracted muscles which remain capable of producing voluntary movements, if only their tendons be relatively or actually lengthened so as to allow of a range of movement.

The fibrosis is probably the result of a myositis caused by either malnutrition from prolonged anæmia or from direct splint pressure. Those fibres which are directly compressed between the splints and the bones are the most likely to suffer. When the splints are removed the blood enters the damaged muscles and inflammation follows, to be followed later by degeneration of the muscles into fibrous connective tissue. In addition, the inflammatory exudate surrounding the muscular fibres, when organization takes place, will augment the amount of fibrous tissue present.

Other causes which may lead to this condition are direct traumatism to muscles, extensive cellulitis, injury to the main artery of a limb, pressure of Esmarck's bandage, and cold.

*Diagnosis:* With the history to guide us and characteristic deformity present, it is difficult to mistake Volkmann's contracture for anything else. The simultaneous appearance of paralysis and contraction are of great diagnostic value, because this distinguishes the condition from the contractures following lesions of the peripheral nerves or of the central nervous system, in which paralysis *precedes* contracture by a long interval. The normal electrical reactions of the muscles which are contracted are also valuable aids in diagnosis. Late ulnar paralysis with the "main en griffe" may simulate the deformity under discussion. In this paralysis there is wasting and degeneration in the muscles supplied by this nerve only. The wrist is not flexed and there may be sensory and trophic disturbances of the skin. Median nerve paralysis can hardly be confounded. In musculo-spiral palsy, although there is drooping of the wrist, it is due to paralysis of the extensors and not to contraction of the flexors, as in Volkmann's contracture, and besides, the flexion may be easily overcome by passively extending the wrist. The involvement of the supinator longus and triceps in some cases, with the reaction of degeneration in some cases, is sufficiently characteristic for a correct diagnosis.

As pointed out by Dudgeon, electrician at St. Thomas' Hospital, that although these points are generally sufficient for diagnosis between the deformity in question and peripheral nerve palsy, yet it is highly probable