Microscopic and Ultrastructural Changes of Peripheral Nerve in Indirect Firearm Injuries
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To explore the morphological characteristics of indirect firearm injuries to peripheral nerve, we used in this experiment steel balls of 1.03g, at velocity of 1500m/s, 400m/s (high, low speed), to shoot once to hind legs of dogs. Six hours and 10 days after injury, sciatic nerves 4cm from the tract of injury were taken. The neurofilament was observed immunohistochemically using monoclonal antibody NF-200 to show changes in axon, myelin sheath and degenerated myelin sheath under light and transmission electron microscopy in the lesioned sciatic nerves.

It was found that under light microscope, 6 hours after injury, NF-200 positive staining in the sciatic nerve was markedly reduced when compared with that found in low speed group, some region had no staining, some had become star shape or semilunar shape or even empty. In the high speed group, the node of Ranvier in the sciatic nerve was loosen and widened. Under electron microscope, it was seen in the high speed group that the axons were partially exposed with the myelin sheath split up. Laminated myelin layers were distorted. Ten days after injury, the above mentioned injury increase in severity, and myelin sheaths began to degenerate. In the low speed group, the structural changes in the sciatic nerve were obviously less severe than that of the high speed group.

This paper combined the features of ballistic in understanding the possible mechanism of indirect peripheral nerve injury caused by firearms.