(anticonvulsant was sometimes effective on the complaints on the neck and shoulder). That is, it might be speculated that some symptoms are embellished with the brain-disorders.

Obstinate cases in the chronic stage were able to classify to two groups; that is, one group (7 cases) had chiefly the complaints of headache, migraine and neck occipital symptoms, and another group (6 cases) had pain in the neck and shoulder girdle. They said that first group was derived from the disorders in the vertebral artery, vertebral nerves, and cervical sympathetic nerves. But, on our experiences, patient's complaints re-occurred on the discography at the upper cervical spine (C2-3, C3-4). As a brace without loading and anterior spinal fusion were effective, the intervertebral disc lesions in the upper cervical spine were thought for primary cause of this disease. On second group, traction, brace without loading, scalenotomy, and anterior spinal fusion were effective.

Based on these findings, the following conclusions were drawn that an obstinate case of whiplash injury must be treated as an intervertebral disc lesion at the cervical spine.

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183. About So-Called "Whiplash Injury" in Neurosurgical Field

Hiroki HIRAI, Masayuki TAKEDA, Shuji OHKAWARA and Teruyoshi HASHIBA

Department of Neurosurgery, Sapporo Medical College

We have experienced 2967 cases of trauma to the head and/or the neck due to traffic accident during past 2 years and 5 months in the Sapporo Medical College Hospital.

This report reveals the analytic data about the cases of so-called whiplash injury only.

As to sex distribution, male was 69.6%, female 30.4%. 58.2% of cases was caused by rear-end collision. The disturbance of consciousness was observed in 53.7% of cases, 66% of cases began to complain of more or less certain symptoms within 3 days. In the X-ray examination, 13.9% of cases reveals slight compressed fracture, 19.5% of cases cervical instability, 10.2% of cases narrowing of intervertebral space and 54.1% no changes.

In 2 cases with typical great occipito-trigeminal syndrome in which Cloward procedure was carried out for the lower cervical part, the headache in the occiput was markedly improved. From these results we are impressed that there might be some unknown mechanism which results in great occipito-trigeminal syndrome not only in the upper cervical part, but even in the lower cervical part.

As to the prognosis, in 26.4% of cases the sign and symptom were subsided

within 2 weeks under the nonsurgical adequate treatment, more than 50% of cases within 2 months and in 3% of cases suffering over 6 months in which Cloward's procedure was carried out selectively with the good result.

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184. The Cervical Lesion in the Head Injury with Special Reference to the "Whiplash Injury"

Jiro SUZUKI, Shigeaki HORI, Keiki UNEOKA,
Shigeaki KANAYAMA and Namio KODAMA

*Division of Neurosurgery, Institute of Brain Diseases,
Tohoku University School of Medicine*

Recently cases of cervical injury have been increased in our clinic too, they were counted 6.5% in 1964, 5.8% in 1965, 15.9% in 1966 and 31.8% in 1967 in total of the cervical and head injured cases.

Major symptoms of them are: 1) headache 71.7%, 2) cervical-shoulder-arm pain 47.7%, 3) dizziness 43.0%, 4) paresthesia or numbness of extremities and face 29.7%, 5) ocular symptoms 24.2%, 6) tinnitus 20.3%, 7) nausea and/or vomiting 19.5%, 8) weakness of extremities 10.9%, 9) gait disturbance 10.1%, 10) hearing loss 6.3%. We divided them into two major groups, the "whiplash" group typically caused by the collision accident and the group of cervical lesion associated with head injury. No remarkable difference was seen not only in above mentioned symptoms but also in clinical course, x-ray findings and other objective findings in these two groups. This led us to the conclusion, "whiplash" is indefinite, unobvious term and attention should be paid to the cervical condition of the head injured persons in early stage.

From the analysis of eleven chronic cases of the cervical injury, it was also emphasized that cervical spondylosis, atherosclerosis, vertebral artery compression were most important factors that disturbed the therapeutic procedures.