A Case of Cervico-brachial Disorder due to Tactile Interpretation for Deaf-blind Persons

Teruyo Kitahara1, Kenji Nakamura2, Kazushi Taoda1, Hiromasa Shigeta2 and Mamoru Hirata3

1Division of Occupational and Environmental Health, Department of Social Medicine, Shiga University of Medical Science, Japan, 2Osaka Institute of Social Medicine, Japan and 3Research Center for Environmental Medicine, Kansai Rousai Hospital, Japan

Abstract: A Case of Cervico-brachial Disorder due to Tactile Interpretation for Deaf-blind Persons: Teruyo Kitahara, et al. Division of Occupational and Environmental Health, Department of Social Medicine, Shiga University of Medical Science—Objectives: We herein report a case of cervico-brachial disorder (CBD) due to long-term tactile interpreting. Methods: The patient was interviewed to investigate her past history, occupational history, work conditions and clinical course in detail. The case was diagnosed in accordance with the “Diagnostic Criteria for CBD 2007” established by the Research Association for CBD of the Japanese Society for Occupational Health. Results: The patient was a 49-year-old female who has worked as a regular occupational instructor at a welfare work activity center for deaf people since April 22, 2010. Her primary job is to instruct and aid others in learning confectionery manufacturing and coffee shop tasks. She also performs tactile interpreting for two deaf-blind workers during a morning health check and during any meetings. On September 3, 2010, she interpreted by tactile signing for about three hours alone during a meeting, due to the absence of other interpreters. She developed severe pain in her back immediately after carrying out this interpretation, and the pain thereafter continued and developed in the upper extremities. She was diagnosed with a severe and prolonged case of the non-specific type of CBD. Discussion: Interpretation by tactile signing may impose a heavier burden on the upper extremities, shoulders and neck than that imposed by common sign language. A shorter time of interpretation, ensuring the availability of rest time and supporting tools or methods for the upper extremities, are therefore considered to be necessary to prevent the incidence of CBD among interpreters using tactile signing.

Key words: Cervico-brachial disorder (CBD), Deaf-blind person, Tactile interpretation

Tactile signing for a deaf-blind person is a communication method in which sign language performed by the interpreter is read by the deaf-blind person by setting his or her palm on the back of the interpreter’s hand. The interpreter faces the deaf-blind person and performs sign language by holding his or her upper extremities in midair (Fig. 1). The interpreter’s upper extremities are stretched forward in comparison to ordinary sign language. In addition, the weight of the hands of the deaf-blind person applies force to the interpreter’s hands. Consequently, tactile signing may impose a heavier burden on the interpreter than ordinary sign language. The authors experienced a case of cervico-brachial disorder (CBD) due to a long duration of tactile interpretation. This report presents the first case of CBD among tactile interpreters for deaf-blind persons in Japan.

Case Presentation

Case

Forty-nine-year-old female

Past history: Bilateral sensorineural hearing loss developed as a side effect of antibiotic treatment at 4 years of age, thus resulting in deafness at 11 years of age; she developed lung tuberculosis at 27 years of age, followed by a relapse of lung tuberculosis at 37 years of age.

Occupational history: She worked as an assembly worker in a television plant from 23–30 years of age, as a medical office worker from 38–47 years of age, as a clerk in a center associated with sign language
at 47 years of age and as a part-time lecturer on sign language for 1 year after resigning from the center on April 22, 2010, to become a regular occupational instructor in a welfare work activity center for deaf people. She has learned sign language as her common communication method.

Work conditions

Her primary job is to provide instruction and assistance for confectionery manufacturing and coffee shop tasks done by workers who are deaf or have other disabilities at the center, to inspect confectioneries for defects, to deliver confectioneries and to sweep the confectionery manufacturing room. She also performs tactile interpreting to 2 deaf-blind workers during 2−3-hour workers meetings for 15−20 minutes in turns by 2 or 3 instructors including her. She interpreted by tactile signing for about 3 hours alone during a meeting on September 3, 2010, due to the absence of other interpreters. She felt severe pain in her back immediately after carrying out this interpretation, and the pain thereafter continued. She became unable to lift her upper extremities higher than her shoulders on September 13. She subsequently experienced neck-shoulder pain, various fatigue symptoms, tinnitus, and a heavy and immobile sensation throughout her whole body while sleeping on her futon in the morning. She thereafter interpreted by tactile signing with one deaf-blind worker who frequently talked to her during confectionery manufacturing on October 5. She felt difficulty in holding up her upper extremities due to pain in the upper extremities and shoulders but nevertheless continued to communicate by tactile signing. Two days later (October 7), she was diagnosed with severe CBD by the first author (TK), who is an attending physician, during a yearly health check-up for CBD performed at her workplace and was required to seek treatment and leave her job. She had never consulted with a doctor prior to the check-up because she had not been aware of the possibility of CBD.

Records of health check-ups for CBD

Her primary complaints were pain in the upper extremities and back and inability to lift her upper extremities. Her regional symptoms were pain in the bilateral neck, shoulders and back and a dull feeling in the bilateral hands, forearms and upper arms.

Functional tests of the upper extremities showed that she could tap 52 times within 30 seconds with the right hand and 49 times with the left, that the pinch power of the thumb and index fingers was 3.3 kg for the right hand and 3.0 kg for the left hand and that her grip power by the 5 times method ranged from 19 to 26 kg for her right hand and 15 to 24 kg for her right hand.
interpretation. Tenderness and indu-
 nations were found on palpation at upper extremity muscle groups, occipital muscle groups, the trapezius muscle and paraspinal muscles of the back. The specific CBDs were excluded based on the findings of a physical examination, neck and shoulder X-rays, and a blood examination. The patient was diagnosed with a severe and prolonged case of the non-specific type of CBD, based on the “Diagnostic Criteria for CBD 2007” 

Discussion

CBD is divided into the specific types including CTS and the non-specific type. The latter type became a controversial issue in the workplace in the 1960s in Japan. The diagnostic criteria for CBD also remain a controversial issue internationally. However, the Research Association for CBD, of the Japanese Society for Occupational Health established the “Diagnostic Criteria for CBD 2007” 

The authors have reported CBD due to sign language since 1989 (Taoda 1989, Kitahara 1996, Taoda 1997, Tomioka 2004, Hirata 2005). Sign language puts a load on the hands and forearms due to finger motion and on the upper arms, shoulders and neck due to the need to hold the upper extremities with the elbows somewhat bent in midair. The authors have proposed some countermeasures for deaf people and sign language interpreters. The Japanese Federation of the Deaf and National Research Association for Sign Language Interpretation established rules, including a limit of 15–20 minutes for interpretation.

Interpretation by tactile signing may impose a heavier burden on the upper extremities, shoulders and neck than when performing common sign language because the interpreter’s upper extremities are held in midair while being stretched forward, and the weight of the hands of the deaf-blind person applies force to the interpreter’s hands. In addition, the required intense concentration and mental strain during simultaneous tactile interpretation are psychological risk factors for CBD.

Johnson et al. reported that interpretation by tactile signing loaded the upper extremities, shoulders and neck of the interpreters but caused no clinical case of CBD. Therefore, there is no previous case report of CBD induced by tactile interpretation.

The current case was diagnosed as non-specific CBD in accordance with the “Diagnostic Criteria for CBD 2007” based on the following: 1) symptoms, 2) clinical findings, 3) time course of symptoms and work load of the upper extremities, 4) contribution of the work load and 5) exclusion of specific CBDs.

The relatively heavy load on the upper extremities and lumbar back due to tactile interpretation and other jobs did not severely affect her daily life and work until August, although she had started to experience pain in her arms and upper back in May. However, the severe upper back pain started just after performing a long duration of solo tactile interpretation in a meeting for deaf-blind workers on September 3, and the resulting pain was prolonged. It is assumed that this long session of tactile interpretation overloaded her and led to worsening of the CBD in this case. Furthermore, the burden of conversation with a deaf-blind worker on October 5 led to exacerbation of the symptoms associated with CBD; consequently, she showed clear findings during a scheduled health check-up for CBD two days later. She may have been able to prevent the worsening of her CBD by consulting a doctor about her poor physical condition if proper occupational health and safety training had been provided at the start of her job.

A shorter duration of interpretation, e.g., 10–15 minutes, ensuring the availability of rest time and support tools or methods for the upper extremities are, is therefore considered to be necessary to prevent the incidence of CBD among interpreters using tactile signing.

References

4) Kitahara T, Taoda K, Nishiyama K. An experimental study on the work load of continuous sign language interpretation. Sangyo Eiseigaku Zasshi 1996; 38:


