Paraplegia

Wrestling Causing Paraplegia

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Summary

This report deals with 4 patients who had a spinal cord injury resulting from wrestling. The cause and the results are discussed.

Key words: Wrestling; Paraplegia; Spinal cord injury.

Wrestling is a traditional sport in Turkey. It is generally performed in certain clubs and schools according to the rules of FILA. There is also a kind of wrestling which is common since ancient times (800 AD) (Adler, 1981). In this type the men wear long, tight leather pants and strive supine touch fall. In public, it is also very common between friends to wrestle during their spare time. The aim of this report is to point out how wrestling can cause severe spinal cord injury. There are some, but few reports (Wu, 1985; Leidholt, 1973) dealing with this subject. Wu (1985) reported 3 severely injured wrestlers, and Leidholt (1973) reported 11 but the degree of injury and the part of the spine injured were not mentioned. In this report, 4 patients who were treated at Hacettepe University, Neurosurgery Department, Ankara are presented. The data was obtained from our institute between 1968 and 1983. During the same period 182 patients were treated because of a cervical spinal injury in our department. The 4 patients were admitted from all over the country.

Case 1

A 25-year-old male patient, a professional and a member of the National Team, was admitted with severe neck pain. During an exercise, while performing a position called 'bridge', one of his friends spoiled his position, and his neck became hyperflexed. In this position the athlete puts his vertex to the ground and supports his body with his legs by flexing the knees and also supports his head with his arms. So his body takes up a position parallel to the ground. The counteracting athlete who tries to spoil this position can only use his hands and pull on his partner's shoulder. Pulling suddenly from the legs is forbidden according to the rules. This happened to our patient. Because of the sudden hyperflexion of the neck he had sudden, severe neck pain. Neurological examination on admission was normal. Plain X-ray examination revealed narrowing of the C5-6 intervertebral disc space.

At first medical therapy and physical therapy was given. A month later his pain increased. The deep tendon reflexes were decreased in the right upper extremity. Myelography was performed, and showed an extradural mass effect at C5-6 level more prominent on the right side. Anterior discectomy, with foraminectomy and a Cloward type of bony fusion was performed. The post-operative course was uneventful and he remained normal for 1 year. A year after the operation he was re-admitted with pain again. Neurological examination revealed a right-sided cervical cord lesion. Repeat myelography showed an extradural mass at the C5-6 level. By an anterior approach sequesters of bone were cleared out and vertebrectomy plus a bony fusion was performed again. The patient is now in good condition except for slight right tetraparesis.

Case 2

A 36-year-old male, while wrestling with a friend was thrown on to the floor in a twisted position. He struck his head on the ground and his neck became twisted. He was admitted to our hospital with severe pain. Neurological examination was normal except for neck sensitivity. Plain X-rays revealed an anterior dislocation of C3 vertebra on C4. Crutchfield traction with 7.5 kg weight was applied immediately. When normal alignment was achieved a Cloward-type of anterior fusion was performed. The post-operative course was uneventful and the patient was doing well at the end of the first post-operative year.

Case 3

A 35-year-old male patient was admitted to our hospital with weakness of both arms and legs which occurred during wrestling with a friend. His partner pulled his neck suddenly with both of his hands in the upright position rather obliquely. He lost his consciousness and on regaining consciousness was found to have weakness of all four extremities. Neurological examination showed that the patient was quadriplegic. Cervical X-rays demonstrated a fracture-dislocation of C5-6. Crutchfield tongs with 12.5 kg weight were applied. Then vertebrectomy plus an anterior bony fusion operation was performed. The patient was rehabilitated in the post-operative period, and was able to use his hands and arms and could use a wheelchair on discharge. Follow-up examination showed no amelioration.

Case 4

A 15-year-old male was injured during a wrestling match. He was thrown to the ground and his neck was twisted, and he experienced sudden neck pain and weakness of all four extremities.

On admission his general status was found to be poor. He had a forced respiration. Neurological examination revealed quadriplegia. There was no voluntary movement of the shoulders, arms and legs. Cervical X-rays revealed a C3-4 dislocation. Crutchfield tongs were applied immediately, and he required respiratory assistance. Steroids were given. The same night there was sudden respiratory and cardiac arrest, resuscitation failed and he died. The post-mortem examination was performed for legal purposes; unfortunately it was not a detailed one, to explain the type of injury. Only a severe cervical cord lesion was mentioned, and oedema of the upper cervical segments.

Discussion

Wrestling is a sport which needs healthy, strong bodies, because of its tough character. All the muscles of the body must work in co-ordination. Beyond its hard character, modern wrestling at present is performed more quickly and needs technical skill. For this reason athletes who are going to participate in this sport

must be well trained both physically and mentally. Young wrestlers in particular must know every aspect of the sport in detail in order to prevent injury (Wu, 1985). Our fourth patient, being inexperienced, could not protect himself while falling to the ground. Another factor in this patient probably was the unequal partner. In international games the choice of the partners is done very carefully, according to weight (Adler, 1981). This is not so clear in our traditional country wrestling.

Falling to the floor in a twisted position, as well as unaccepted holds were considered to account for cervical spine and cord injury (Wu, 1985). Our second and fourth patients were injured by falling to the ground in twisted positions. The head was also involved in those type of injuries, it struck to the ground but the injury mainly involved the cervical spine.

Our third patient became quadriplegic with an unaccepted hold. Pulling the neck with two hands is dangerous and forbidden according to the rules. During a regular match the athletes can only pull their partner's heads and necks with one hand. The type of hold which caused our patient's injury is forbidden according to the regulations.

Acute disc herniation was the result of hyperflexion in our first case. Hyperflexion or hyperextension with rotational forces as described by Roaf (1960), and accepted by Babcock (1976) and Wu (1985) were probably the cause of the cervical spine and cord lesions in our patients.

The coach in our University described two positions which may cause a cervical spine injury. One is forcing the neck forward while pulling the body backwards (on the ground). In this manoeuvre while both of the wrestlers are on the ground the active athlete passes his leg around his partner's leg on one side and tries to pass his hand through the armpit of the passive athlete on the other side. By doing this he aims to turn his partner for a supine touch. While performing this if he forces his partner's neck he may cause an injury.

The second manoeuvre is called 'Bras Roule'. Both the wrestlers are standing. The active athlete tries to pass his head through the armpit of his partner. The passive one in contrast, if he forces the neck of his partner against his chest, may cause an injury. Generally the professionals know this sport and can defend themselves. Also if two equal partners are forcing each other an injury is less likely to occur.

An anterior cervical spine operation including bony fusion was performed in 3 of our patients. Vertebrectomy was done in the third case in order to decompress the nerve roots and to stabilise the spine. This is our policy for quadriplegic patients. In case 1, myelographic re-examination was done because of neurological deterioration at the end of the first post-operative year. The mass effect found in this examination was due to bone graft failure and it was restored. Lunsford *et al.* (1980) advised a 14% re-evaluation by myelography and a reoperation was necessary in 6%. CT nowadays provides more detailed information about these situations.

As is seen in our patients and has also been stated previously (Wu, 1985) wrestling can cause severe spinal cord injury. Young wrestlers must be trained well and referees must be very careful to prevent the occurrence of injuries.

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