An Elderly Odontoid Fracture Caused by a Minor Traumatic Event

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Trauma specialists who are engaged in trauma and critical care medicine normally treat patients with high-energy injuries. However, odontoid fracture occurs in relatively high frequency at cervical area. Odontoid fracture is potentially life-threatening type of cervical injury. It might eventually stop the breathing due to displacement of spinal cord, often resulting in fatal condition. It has been estimated in 10% of the cases, hence evaluation of the cervical spinal need to be considered which may otherwise get overlooked in minor cases of fracture.

We report the case of an 82-year-old woman who fell down during walking which is a minor event. She knocked the back of her head, and it became hard to move the neck without pain. She was transported by ambulance without support to cervical spine. She had no motor or sensory disturbance. But had mild osteoporosis, and on Teriparatide therapy by subcutaneous injection (20 microgram/day). She presented to the emergency room (ER) with hemodynamically stable state with clear conscious level. Her physical examination showed slight tenderness on left side of neck, however, no neurological abnormality. She revealed no wounds to the head. Brain computed tomography (CT) detected no abnormalities of acute injury. Nevertheless, cervical CT showed odontoid fracture, Anderson type 2 (Figure 1-A, 1-B and 1-C). The orthopedist continued to use a neck brace to support the patient’s neck and head. The patient was hospitalized overnight and discharged the following day. Subsequently, the patient had appointment to visit the orthopedic clinic.

Based on this incident, it may be pertinent to note that although neck pain could be a daily minor issue, it ought to be taken seriously. Firstly, continuous pain, tenderness of the neck and motor disorders are important symptoms of odontoid fracture, hence this diagnosis had to be considered even in a minor injury,

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and cervical CT performed. According to the National Emergency X-Radiography Utilization Study (NEXUS) criteria and the Japan Advanced Trauma Evaluation and Care (JATEC), imaging should be performed with recognized cervical tenderness in a patient.

In addition to recording patient’s background such as ageing, it is important to note past history on osteoporosis and disproportionate osteoarthritic degenerative changes. Based on these findings, it is more meaningful to examine the cervical CT rather than plain X-ray film. It has been reported that old aged people are more likely to suffer from Type II odontoid fracture from a simple fall as the dens is fixed to the atlas due to degeneration of atlanto-odontoid joint and smooth lateral atlantoaxial joint. Secondly, CT is the most simple, fast and optimal imaging system in emergencies. In CT examination, combination of various types of imaging is very helpful including sagittal and coronal directions. However, it is quite hard to confirm the fracture using only 3D image in this type of injuries (Figure 1-D).

In an aging society, this type of case is considered as typical which should alert the physicians engaged in emergency care. Daffner et al. reported that upper cervical lesions accounted for 68.9% of all cervical injuries in the elderly and 35.8% in young people. In Japan, 25.2% (26/103 cases with upper cervical injury) revealed odontoid fracture, and 9 of 26 cases (34.6%) was over 65 years, also 88.9% (8/9 cases) were caused by simple fall. Thus, medics have to be aware even in minor injury case; the upper cervical spine may be injured in elderly people.

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