

Clinical features and outcomes of delayed facial palsy after head trauma



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ABSTRACT

Objective: To investigate clinical features and outcomes of delayed facial palsy after head trauma. **Methods:** The cases who had delayed facial palsy after head trauma treated from March 2008 to March 2013 at our hospital were enrolled in the study, and their clinical features and outcomes were analyzed.

Results: Thirty-five of 1620 cases developed delayed facial palsy after head trauma. Facial palsy occurred within day 3–7 in 23 cases, during day 8–14 in 8 cases, and 2 weeks later in 4 cases. Thirty-three cases were treated by prednisolone alone, and two cases who showed $\geq 90\%$ degeneration of nerve fibers underwent surgical exploration and decompression. Among the 33 cases who received conservative treatment, 27 cases (81.8%) recovered completely, 3 cases (9.1%) recovered to Grade II, and only 3 cases (9.1%) recovered to Grade III or IV. The two surgically treated patients recovered to Grade II and III, respectively.

Conclusion: The incidence of delayed facial palsy was 2.2% after head trauma. Delayed facial palsy mainly occurred within 2 weeks after head trauma. And over 90% patients achieved good recovery (HB Grade I or II) of facial nerve after conservative treatment.

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1. Introduction

Head trauma is common in trauma centers due to a number of traffic accidents each year. Temporal bone fractures are not infrequent among head trauma, and 7–8% of temporal bone fractures are accompanied by facial palsy [1]. Delayed facial palsy associated with temporal bone fracture is rare, and it is reported that delayed facial palsy accounts for only 24.4% (28 of 115 cases) of

facial palsy resulting from temporal bone fractures [2]. There are quite few studies focusing on delayed facial palsy after head trauma, and the information about its features and outcomes is too limited [3–5]. The purpose of our report is to present clinical features and outcomes of a large case series of delayed facial palsy after head trauma, guiding clinical management.

2. Materials and methods

2.1. General data

Thirty-five cases who developed delayed facial palsy (delayed facial palsy referred to facial palsy occurred 48 h

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later after head trauma, in accordance with Sanus et al.'s definition [3]) among 1620 cases (male:female ratio, 2.8:1; mean age, 34.6 ± 19.4 years) admitted due to head trauma from March, 2008 to March, 2013 at our hospital, were reviewed retrospectively. There were 28 males and 7 females, aged 32.3 ± 12.2 years (range, 17–63 years). There were 20 cases of traffic accident, 8 cases of high falling and 7 cases of fighting.

2.2. Preoperative and postoperative evaluation

Facial nerve function was evaluated according to House-Brackmann grade system [6]. The patients were followed up for one year, and facial nerve function was recorded. Head CT was performed immediately on all patients who had head trauma after admission, and high-resolution CT (HRCT) of temporal bone was conducted on all patients who developed delayed facial palsy. Electroneurography (ENoG) was carried out within 6 days after facial palsy onset.

2.3. Treatment of delayed facial palsy

All cases were administered oral prednisolone tablets within 2 days after facial palsy, 1 mg/(kg d) (the maximum dose was 80 mg), once per day, for one week. The dose was then reduced by 10 mg per two days. Only two patients who showed more than 90% degeneration of nerve fibers on ENoG within 6 days after palsy onset underwent total facial nerve decompression via middle cranial fossa combined with transmastoid approach [7].

3. Results

3.1. The incidence of delayed facial palsy after head trauma

Among the 1620 patients admitted due to head trauma in our hospital, delayed facial palsy affected 35 cases, with the incidence of 2.2%.

3.2. Clinical characteristics of delayed facial palsy after head trauma

Facial palsy affected the right side and left side in 18 and 17 cases, respectively. It occurred during day 3–7 in 23 cases, day 8–14 in 8 cases, and day 15–21 in 4 cases (Fig. 1). And the mean period of delay was 7.2 ± 4.8 days (range, 3–21 days). 30 patients had coma of various degree after trauma, among which deep coma was found in 2 cases. Ear and nose bleeding were found in 23 cases (65.7%) and 4 cases (11.4%), respectively. There were temporal fractures in 25 cases (71.4%), revealed by HRCT of temporal bone, among which 13 cases were accompanied by brain contusion and laceration, and simple brain contusion and laceration or subdural hematoma without fractures was noticed in the remaining 10 cases (28.6%). Fracture types included longitudinal fracture (17 cases), transverse fractures (5 cases) and mixed type (3 cases). Fallopian canal was affected in 5 cases, but no obvious compression of facial nerve was found by HRCT.

ENoG within 6 days after palsy onset showed that only 2 of 35 patients showed more than 90% degeneration of nerve fibers,

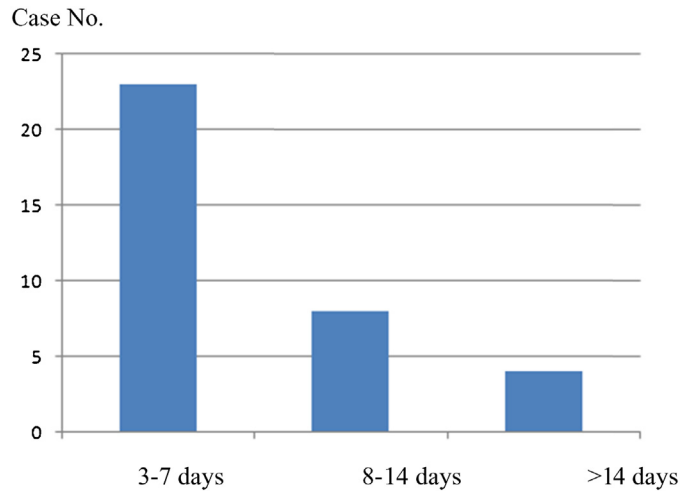


Fig. 1. Onset of delayed facial paralysis after head trauma.

among which one showed 100% degeneration of nerve fibers, and the remaining 33 cases showed less than 90% degeneration of nerve fibers. For the two surgically treated patients, it was found that there was obvious edema of facial nerve in both cases, and micro-bony spicules adjacent to facial nerve were found in one case.

3.3. Outcomes of delayed facial palsy after head trauma

Among the 33 cases who received conservative treatment, 23 cases (69.7%) recovered completely within 8 weeks. In detail, 4 cases recovered completely within 2 weeks, and 16 cases and 3 cases recovered fully during week 2–4 and week 4–8, respectively. One year later, 27 cases (81.8%) recovered completely, 3 cases (9.1%) recovered to Grade II, and only 3 cases (9.1%) recovered to Grade III or IV (Table 1). All of the 3 cases who recovered to Grade III or IV had Grade V or VI of facial nerve before treatment, and ENoG results showed 85%, 88% and 89% degeneration of nerve fibers, respectively. In addition, fallopian canal was affected in two of the three cases, but HRCT did not reveal obvious compression of facial nerve. The two surgically treated patients recovered to Grade II and III, respectively.

4. Discussion

Delayed facial palsy after head trauma should not be confused with Bell's palsy. Incidence of Bell's palsy is estimated to be 0.02–0.03% [8]. But the incidence of delayed facial palsy after head trauma was 2.2% in our study, which was 72–108 times of that of Bell's palsy among population. Moreover, they have different pathogenesis. Bell's palsy is

Table 1
Facial nerve function before and after conservative treatment.

HB grade	I	II	III	IV	V	VI
Before treatment	0	5	11	9	6	2
After treatment	27	3	1	2		

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