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Comparative study of administration of single dose intravenous methyl prednisolone versus oral prednisolone in Bell's palsy

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Abstract

Bell's palsy is a form of facial paralysis resulting from a dysfunction of the cranial nerve VII (the facial nerve) causing temporary weakness of the muscles on one side of the face. They may include muscle twitching, weakness, or total loss of the ability to move one or rarely both sides of the face.

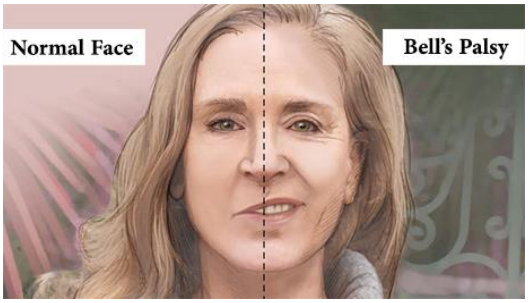
The present study was planned in the Department of Pharmacology in Anugrah Narayan Magadh Medical College and Hospital. The age group of the patients is ranges from 30 to 60 years. The 50 patients were divided into two groups. Patients in Group 1 received the single dose of IV infusion of 500 mg methylprednisolone. The Group 2 patients were administered with the oral predisolon as dosage schedule. (60 mg daily for initial 5 days, tapered by 10 mg daily over next 5 days.)

Hence by prescribing potent type of methylprednisolone in minimal dosage is helpful for producing a given therapeutic effect. From the present findings it can be established that the Single dose of 500 mg of IV methylprednisolone is consistently proficient substitute to a 10 days course of oral prednisolone.

Keywords: Bell's palsy, facial nerve, methylprednisolone

Introduction

Bell's palsy is a form of facial paralysis resulting from a dysfunction of the cranial nerve VII (the facial nerve) causing temporary weakness of the muscles on one side of the face. Bell's palsy is a type of facial paralysis that results in an inability to control the facial muscles on the affected side. Symptoms can vary from mild to severe. They may include muscle twitching, weakness, or total loss of the ability to move one or rarely both sides of the face. Other symptoms include drooping of the eyelid, a change in taste, pain around the ear, and increased sensitivity to sound. Typically symptoms come on over 48 hours [1].



Fig

Following are the symptoms of the condition:

- Irritation of the affected eye, such as dryness or increased tear production
- Pain underneath the ear on the affected side of the face
- Drooling from the mouth on the affected side of the face
- Dryness of the mouth
- Difficulty in eating or drinking
- Impaired speech
- Weakness or paralysis in one side of the face, which may make it difficult to close the eyelid and cause the side of the mouth to droop
- An altered or reduced sense of taste
- Increased sensitivity to sound in the affected ear
- Pain around the jaw
- Headache
- Dizziness

The causes of the Bell's palsy includes mainly the V

Virus: The herpes virus is common cause of inflammation of the facial nerve. The herpes simplex virus (HSV), including either herpes type 1 (HSV-1) which causes cold sores or herpes type 2 (HSV-2) which causes genital herpes. The varicella-zoster virus, which causes chickenpox and shingles.

Facial Nerve: The facial nerve (VII) passes through a narrow gap of bone near the upper jaw on its way from the brain to the face. If the facial nerve is compressed or swollen it can interfere with the signals that brain sends to the muscles of the face. This interference can restrict the blood and oxygen supply to nerve cells and cause the facial weakness or paralysis that is characteristic of Bell's palsy.

The condition normally gets better by itself with most achieving normal or near-normal function [1]. Corticosteroids have been found to improve outcomes, while antiviral medications may be of a small additional benefit [3, 4]. The eye should be protected from drying up with the use of eye drops or an eyepatch. Surgery is generally not recommended. Often signs of improvement begin within 14 days, with complete recovery within six months. A few may not recover

completely or have a recurrence of symptoms [1].
Bell's palsy is the most common cause of one sided facial nerve paralysis (70%) [2, 5]. It occurs in 1 to 4 per 10,000 people per year [2]. About 1.5% of people are affected at some point in their life [6]. It most commonly occurs in people between ages 15 and 60. Males and females are affected equally. It is named after Scottish surgeon Charles Bell (1774–1842), who first described the connection of the facial nerve to the condition [1].
There is no specific test to diagnose Bell's palsy. Symptoms associated with the Bell's palsy help physician to determine the disease.

Magnetic resonance imaging (MRI): It is used to determine the cause of the pressure on facial nerve. MRI scans use radio waves and a strong magnetic field to produce a detailed image of the inside of body.

Computerized tomography (CT) scan: It is also be used to detect other causes of symptoms, such as an infection or tumor. A facial CT scan may also be carried out to rule out facial fractures.

Electromyography (EMG): It is a very thin needle electrode that is inserted through the skin into the muscle. A machine called an oscilloscope is then used to measure the electrical activity of the muscles and nerves. The information provided by an EMG can be used to assess the extent of any nerve damage.

Steroids have been shown to be effective at improving recovery in Bell's palsy while antivirals have not. In those who are unable to close their eyes, eye protective measures are required. Corticosteroids such as prednisone improve recovery at 6 months and are thus recommended [3]. Early treatment (within 3 days after the onset) is necessary for benefit with a 14% greater probability of recovery.
Like most adrenocortical steroids, methylprednisolone is typically used for its anti-inflammatory effects. However, glucocorticoids have a wide range of effects, including changes to metabolism and immune responses. The list of medical conditions for which methylprednisolone is prescribed is rather long, and is similar to other corticosteroids such as prednisolone. Common uses include arthritis therapy and short-term treatment of bronchial inflammation or acute bronchitis due to various respiratory diseases. It is used both in the treatment of acute periods and long-term management of autoimmune diseases, most notably systemic lupus erythematosus. It is also used as a treatment for multiple sclerosis. Another potential use of methylprednisolone is for vestibular neuritis [6].
The current study has been planned to compare the efficacy of a single dose of 500 mg of IV methylprednisolone with a 10 days oral prednisolone regime on recovery of patients with Bell's palsy.

Methodology
The present study was planned in the Department of Pharmacology in Anugrah Narayan Magadh Medical College and Hospital. The age group of the patients is ranges from 30 to 60 years. Total 50 patients were evaluated for the study. The approval of the institutional ethic committee had been taken before the study. All the patients were informed consent. The aim and the objective of the study are conveyed to all patients.
Following was the inclusion and Exclusion criteria of the study:

Inclusion Criteria: Patients suffered from unilateral acute facial palsy of no identifiable cause, within 1-week of onset.

Exclusion Criteria:
1. Patients at particular risk of heart conditions, such as congenital disease
2. Pregnant/lactating females.
3. Patients having gastric or duodenal ulcers.
4. Patients having head injuries.
5. Patients sensitive to corticosteroids.

The 50 patients were divided into two groups. Patients in Group 1 received the single dose of IV infusion of 500 mg methylprednisolone. The Group 2 patients were administered with the oral predisolon as dosage schedule. (60 mg daily for initial 5 days, tapered by 10 mg daily over next 5 days.)
All patients were followed for a minimum of 3 months after inclusion, and the outcome analysis was done at 1-month and at 3 months. Cut-off at 1-month and 3 months were used to study the short-term recovery patterns, defined as recovery occurring in <4 months.

Results & Discussion
The data from the two study groups was collected as per the standard operating procedure and presented as below.

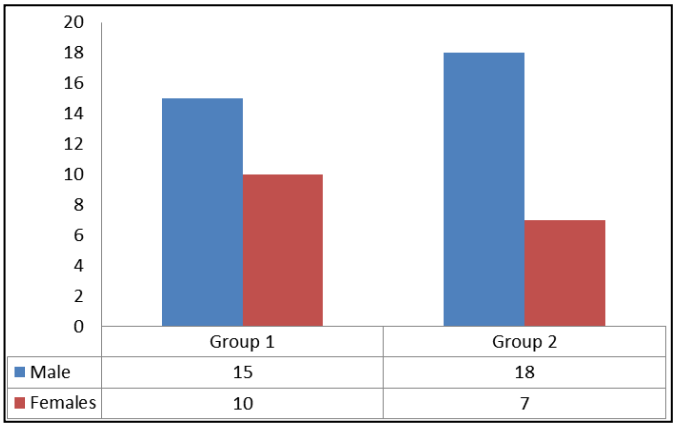


Fig 1: Demographic data

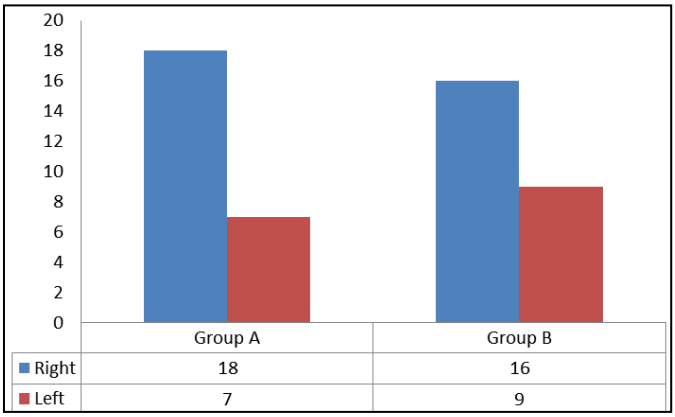


Fig 2: Affected Area of the Patients

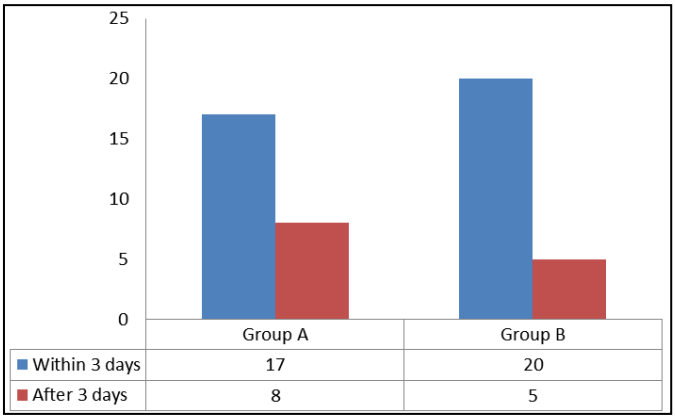


Fig 3: Duration of Illness

Table 4: Outcome after Dose of Prednisolone: Complete Recovery to Grade 1

Grade	Follow Up	Group 1	Group 2
Grade 2 and 3	1 month	8	9
	3 month	0	0
Grade 4	1 month	7	2
	3 month	7	9
Grade 5	1 month	2	1
	3 month	4	5
Grade 6	1 month	0	0
	3 month	1	0

During the present study total 50 patients were undergone the administration of the methylprednisolone. From the above collected data we had found that approximately 80% patients improved absolutely at 3 months of management with either IV methylprednisolone or oral prednisolone. Intravenous methylprednisolone stemmed in non-significantly restored functional reclamation rate specifically at 1-month when evaluated against oral prednisolone and in relations of early association of management.

We presented that grade of Bell′s palsy (severity) is the furthermost significant extrapolative factor for regaining. Our results are comparable to those stated by Sullivan *et al.* who establish that patients with facial palsy of lower grades had a improved conclusion [7]. Grade 6 patients uncommonly had comprehensive repossession. In patients with Bell′s palsy, primary treatment with prednisolone expressively recovers the probabilities of comprehensive recovery at 3 and 9 months. Reliable with these conclusions; our outcomes also recommended that management of Bell′s palsy should be initiated punctually.

In common number of patients, facial nerve impulsively and entirely recovers. The restriction of our study was the non-inclusion of a control group outstanding to an ethical apprehension of divesting patients of a optional form of management [8-9]. The study was directed to stare for short-term retrieval arrangements; an extension to 6 months would have provided more details of patients with incomplete recovery or those in the process of recuperation.

Conclusion

Hence by prescribing potent type of methylprednisolone in minimal dosage is helpful for producing a given therapeutic effect. From the present findings it can be established that the Single dose of 500 mg of IV methylprednisolone is consistently proficient substitute to a 10 days course of oral prednisolone.

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