Abstract:
We present a case of bilateral peroneal neuropathy which developed after successful bariatric surgery. She had lost 40 kg during 16 weeks of follow-up. The foot drop developed after 18 weeks after surgery on the left side and than 24 weeks after surgery on the right side. The bilateral peroneal neuropathy with weight loss is uncommon. The necessity and concerns for bariatric surgery is steadily increasing in the last years. Medical complications associated bariatric surgery should be well known and defined. Herein we want to emphasize the possible risk factors of peroneal neuropathy.

Key words: Peroneal neuropathy, bariatric surgery, weight loss, foot drop, gastric banding,

Özet:

AnahtarKelimeler: Peroneal nöropati, bariatrik cerrahi, kilo kaybı, düşük ayak, gastrik bantlama.
Peroneal neuropathy (PN) around the fibular head is a common mononeuropathy. Compression of the peroneal nerve at fibular head has mainly described in habitual leg-crossers or after squatting (1). Weight loss is another facilitating factor for peroneal nerve compression in this area. Woltman firstly reported the relationship between weight loss and foot drop (2). PN associated weight loss is relatively rare and usually unilateral (4-7). In the literature, there are few cases with bilateral PN after weight loss. (8,9).

Nowadays the anxiety related obesity is rising with the increasing rate of obesity. The non-surgical modalities for obesity such as diets, dietary supplements, and exercise programs long-term success rates have been quite variable. Currently, there is a considerable interest to bariatric surgery (BS) in the treatment of morbid obesity (10,11). As bariatric surgery is an developing and increasing treatment option, medical complications associated BS should be known and more detailed defined. Herein, a case of bilateral peroneal neuropathy by which occurred after extreme weight loss is presented to mention the possible complication of bariatric surgery.

CASE REPORT:

A 30-year-old women, with a long term history of obesity underwent gastric banding surgery with a 110 kg weight and 37.9 kg/m2 body mass index. She has no concomitant disease except polycystic ovary syndrome. She has used daily 5 mg folic acid and combined B vitamin preparation (250 mg thiamin HCl-vitamin B1, 250 mg pyridoxine HCl -vitamin B6 and 1 mg siyanokobalamin - vitamin B12) after BS. She had lost 40 kg in the follow-up 16 weeks. Eighteen weeks after BS she was presented with numbness of the left foot and steppage gait. Subsequently 24 week after surgery similar symptoms was started at the right foot. She expressed that she had habitual leg crossing.

Neurological examination revealed weakness of bilateral ankle dorsiflexion and eversion (left; 3/5 and right; 2/5) and weakness of bilateral toe dorsiflexion ((left; 0/5 and right ;1 /5). The remaining neurological was normal. The laboratory findings were normal.

There was no abnormality at glucose and lipid metabolism parameters. There were no nutritional deficiencies.

Electromyography revealed conduction block and slowing velocity conduction of left deep peroneal nerve at fibular head. The other nerve conduction studies (median, ulnar, tibial, sural) were normal.
Needle electromyography of the bilateral tibialis anterior and peroneus longus muscles revealed abnormal spontaneous activity. Reduced recruitment of motor unit potentials is obtained in tibialis anterior and peroneus longus muscle bilaterally. Other muscles needle EMG (including short head of biceps femoris) study was normal. These results were interpreted as showing conduction block of peroneal nerve at the head of the fibula bilaterally together with evidence of some axonal loss.

**DISCUSSION**

Woltman was the first author who was reported the relationship between weight loss and foot drop (2). And then many cases have been published about correlation between PN and weight loss: dieting, malnutrition, anorexia, severe diseases like cancer, etc (4-6,12). The peroneal mononeuropathy is a common mononeuropathy which is 15% of all mononeuropathies in adults (1). But the prevalence of peroneal neuropathy associated weight loss has not been reported. In a study, 26 patient (7%) developed peripheral neuropathy in 393 patients who have undergone BS and only one of them was PN (13).

The PN associated with weight loss is usually unilateral. (7,14). In the literature, there are few cases with bilateral PN after BS (8,9). Although mononeuropathy was the most common (%81) peripheral neuropathy after BS, polyneuropathy (8%) and radiculoplexus neuropathy (11%) may also be observed (13). Therefore, this diagnosis should be considered in the differential diagnosis in these cases especially with bilateral involvement. Crutez et al suggested that extensive electrophysiologic study should be performed to exclude PNP (1). EMG helped us to rule out other differential diagnoses included polyneuropathy and radiculopathy in our patient. EMG is also beneficial to follow up of the severity and prognosis of neuropathy.

Mechanical factors play an important role in the PN associated with weight loss. It has been suggested that peroneal nerve becomes more susceptible to minor injuries perhaps as a result of the loss of subcutaneous tissue (1,3). Frank et al compared nine patients developed foot drop after BS with a control group who underwent bariatric surgery without PN. They found that rapid weight loss is associated with a higher risk for developing foot drop. They emphasized that slow weight reduction should be recommended to avoid peroneal neuropathy. (7). But mechanical factors are not the only reason. The etiology of PN associated with weight loss is likely multifactorial. The metabolic factors may also involve in the development of nerve dysfunction (3). In a study the possible risk factors associated
peripheral neuropathy after BS has been identified. Rate and absolute amount of weight loss, prolonged gastrointestinal symptoms, not attending a nutritional clinic after BS, reduced serum albumin and transferrin after BS, postoperative surgical complications requiring hospitalization, and having jejunooileal bypass are the such related defined risk factors. Also in this study sural nerve biopsies showed prominent axonal degeneration and perivascular inflammation. So probably inflammation and altered immunity may play a role in the pathogenesis of peroneal neuropathy after BS(11).

**CONCLUSION**

Consequently physicians need to be alert to PN developing after BS. EMG is a very useful examination in both diagnosis and follow-up of recovery. After BS to prevent PN the rate of weight loss should be taken under control. Most importantly, diet of patients should be organized with nutritional clinical support. Inflammation and altered immunity may play a role in the pathogenesis, but further study is needed.

**Conflict of interest:** No conflict of interest

**REFERENCES**

2. Woltman HW. Crossing the legs as a factor in the production of peroneal palsy. JAMA 1929;93:670-672.