

BACKGROUND

Surgery in morbidly obese patients in the supine position is a risk factor for rhabdomyolysis and postoperative kidney function impairment in up to 30% of cases^{1,2}, presumably resulting from dependent muscle ischemia and reperfusion. Rhabdomyolysis (RML) with acute renal failure has been described in 5 patients undergoing minimally invasive spine surgery in the lateral position³ and in 2 prone spine cases. Preoperative statin use, Propofol infusion and paraspinal muscle dissection may contribute to CPK elevations in the postoperative period. We have previously determined that RML is not associated with renal failure in a small group of spine surgery patients. We sought to retrospectively evaluate the frequency of postoperative CPK elevation in 1498 patients discharged from our institution after spine surgery between 1/1/1998 and 1/1/2014.

RESULTS

16 normal weight patients had a CPK elevation > 2000 U/L vs 38 obese patients (p = 0.074). A subgroup of 2 normal weight patients had a CPK value > 5000 U/L vs 7 obese patients (p = 0.242). All of the patients were on propofol infusion except for 1 in the normal weight group and 3 in the obese group. Statin use was similar across the groups with 4 patients in the normal weight group and 7 patients

in the obese group (p = 0.665). Finally the surgical time was similar with a mean of 456.2 minutes (SD 227.2 min) in the normal weight patients and 489.3 minutes (SD 173.9 min) in the obese group. Overall, there was a 3.6% incidence of a CPK elevation above 2000 U/L and a 0.6% incidence of a CPK greater than 5000 U/L after surgery.

METHODS

With IRB approval, we submitted queries to the Clinical Looking Glass® longitudinal inpatient database. We first queried the terms laminectomy and BMI < 30, (LamiN). We then queried the terms laminectomy and BMI ≥ 30 (LamiO). Then we added a search for a CPK value of > 2000 U/L to both. Next these two groups were narrowed to patients that had a CPK value of > 5000 U/L. We then manually reviewed the records with elevated CPK and calculated the BMI at the time of surgery. There were duplicates where normal patients had increased their weight and were obese during their surgery, no patients lost weight. The LamiN list was then compared to the LamiO list and we found there were 403 duplicates, which were then deleted from the LamiN. Thus we are analyzing 620 patients in the LamiN group and 878 patients in the LamiO group. Finally searched the charts of all patients with elevated CPK, recording the presumed risk factors: surgery length, propofol infusion and preoperative statin use. The Chi-Square test applied.

DISCUSSION

CPK elevation after lengthy prone spine surgery is rare. Even if all the patients with postoperative CPK value over 5000 U/L developed renal failure, its incidence would be 0.6%. In this retrospective analysis we did not find that obesity was a significant factor in CPK elevations after a laminectomy. Statin use was not associated with elevated CPK. The weakness of a database review is the quality of the data. CPK is not routinely performed after surgery and patients who might have had RML may have gone unnoticed. However, using the incidence data from this study we can power a prospective study of RML in surgical patients.

REFERENCES

1. Mognol P, Vignes S, Chosidow D, Marmuse JP (2004). Rhabdomyolysis after Laparoscopic Bariatric Surgery. *Obesity Surgery*, 14(1), 91-4.
2. Lagandre S, Arnalsteen L, Vallet B, Robin E, et al (2006). Predictive Factors of Rhabdomyolysis after Bariatric Surgery. *Obesity Surgery*, 16 (10), 1365-70.
3. Dakwar E, Rifkin SI, Volcan IJ, Goodrich JA, et al (2011). *J Neurosurg Spine*, 14, 785-8.