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Research Article

**DO POST-SPINAL SURGERY HYPERGLYCEMIC PATIENT
DEVELOP MORE COMPLICATIONS COMPARED TO POST-
OPERATIVE EUGLYCEMIC PATIENTS.****Omar Saud Almutair, Abdulrahman Hassan Alfahadi, Abdurrahman Homod Almalki,
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Abstract:

Objectives: To compare post-spinal surgery complications among patients who developed post-operative hyperglycemia with euglycemic patients.

Methodology: Out of the 129 patients who underwent spinal surgeries at King Saud University Medical City, Riyadh SA, for two years period.

exclusion and inclusion criteria were applied including only the patients whom their postoperative glucose level was documented and a total number of 106 patients were enrolled in a retrospective analysis study design. Each of the patients' records were thoroughly and comprehensively reviewed and analyzed.

Result : Out of 103 with a mean age of 49 years old , and mean BMI 30.4 , with most of the patients having ASA score 2 [55.7%] , 11 [11.5%] were hyperglycemic, 4 [36.4%] of which developed complications, however 40 [37.7%] were post-operatively euglycemic and developed complications, sub-optimal wound healing was the most common complication among the hyperglycemic and euglycemic [18.2% and 11.8%] respectively , the length of stay was more among hyperglycemic patients by 1.95 days than euglycemic patients .

Conclusion: we conclude that post-operative hyperglycemic patients did not develop higher complications compared to euglycemic patients, however length of stay was more among hyperglycemic patients by 1.95 days compared to euglycemic patients.

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INTRODUCTION:

High glucose level is highly associated with a lot of complication especially in surgical procedures. Postoperative hyperglycemia was poorly investigated as it is associated with a higher number of morbidity and mortality. [1,2]

It has been known that's hyperglycemia and infection is very well related. [3,4,5] New is in fact, hyperglycemia is well known factor in a lot of complications. There was a lot of study that linked hyperglycemia with pre-operative and intra-operative complications but unfortunately there is little studies about postoperative complications Associated with hyperglycemia to the best of our knowledge.

A lot of postoperative patients has been experienced a higher Glucose level, in fact one out of three were euglycemic. [6] This is due to stressor that induced by the surgery like epinephrine and corticosteroid, which raise blood sugar.

METHODOLOGY:

Of the 129 patients who underwent spinal surgeries at King Saud University Medical City, Riyadh SA, for two years period [2013-2015] exclusion and inclusion criteria were applied including only the patients whom their preoperative glucose level was documented and a total number of 106 patients were enrolled in a retrospective analysis study design.

Each of the patients' records underwent a comprehensive and complete review and the data where obtained using a standardized validated data collection sheet, no incentives were provided to the participants, and patients' confidentiality was ensured by separating the patients' basic

information from the data collected in a different sheet kept with the main author.

Hyperglycemia was defined as a random blood glucose of > 11,1 mmol/l according to [Diabetic.org] [7], and [my.clevelandclinic.org]. [3]

Statistical analysis was performed using Statistical Package for the Social Sciences [SPSS] version 19 software.

RESULT:

Among the included 106 patients, 59 [55.7%] were females, 95 [89.6%] were Saudis, with a mean age of 49 years [ranging from 14 to 87 years] with a mean BMI of 30.4 [ranging from 18 to 54], 59 [55.7%] were evaluated as ASA score 2, 31 [29%] as ASA score 1, and 13 [12.3] as ASA score 3.

The causes varied with 66 [62.23%] operations done for degenerative diseases, 18 for deformative and 17 traumatic [17% and 16% respectively], and 9% were due to other causes [inflammatory, tumoral and degenerative-deformative causes], involving most commonly the thoraco-lumbar vertebrae in 81 cases [76.4%], with the posterior approach being the commonest used in 92 cases [86.7%]. 88 [83%] were non-smokers, and 5 [4.7%] patients were using corticosteroids, 33 [34.4%] were DMs, 11[11.5%] of all patients had hyperglycemia, 4 [36.4%] of the hyperglycemic patients had at least one postoperative complication, compared to 40 [38.5%] among the euglycemics [P value .004].

Suboptimal wound healing is the most common complications [18.2%, n 2] among hyperglycemic patient. In the other hand, respiratory and nervous system complication was accounted for [18.2%, n 2].

There is an increase in the BMI among the DMs by 3.09[mean in DMs 32.72, mean in NDMs 29.63 [P value] ?.

Length of stay was more among Hyperglycemic patient by 1.95 days [mean in Non-Hyperglycemic patients 9.75, mean in Hyperglycemic patient 11.70] [P value.315]. In contrast, time of surgery in NDMs was higher than DMs by 21.27 minutes [mean in DMs 244.06, mean in NDMs 265.33].

Mean blood loss was higher in the Hyperglycemic patient 470.64 ml compared to the mean of Non-Hyperglycemic patients 413.94 ml.

DISCUSSION:

Postoperative hyperglycemia has been associated with a lot of complication such as [Longer hospital stay, suboptimal wound healing, DVT] which was mentioned in the literature. [8,9]

In this study, there was 106 patients included more than half of them are female with mean age of 49 years [ranging from 14 to 87 years] with a high BMI of [30.4].

Diabetes is very well-known risk for operation related complication; in fact, DM patients are two time more likely to have post-operative infection [10] postoperative hyperglycemia has been linked to many complications [SSI, UTI, sepsis] [11]

A tighter control of blood glucose level has showed a decrease in mortality and decrease in early complication related to infections, vascular event and sepsis. [1,2]

In one of the studies shows, infections was accounted for most of the post-operative infections for about one third of the patients the quarter of them were related to surgical site infection. [6] We found that among the total patients underwent spinal surgeries, only 11 were hyperglycemic postoperatively, and merely 4 [36.4%] of hyperglycemic had at least one complication.

Most common complication being related to the delay of surgical wound healing followed by respiratory and Nervous system complications. This can be explained by the strong influence of Hyperglycemia in affecting the immune function, which also was suggested to be associated with infectious complications. [12, 13, 14]

Obesity is common comorbidity of diabetes mellitus [type 2] as appeared in our study BMI among the DMs Were more by 3.09 compared to NDMs.

Length of stay was longer in Hyperglycemic patient compared to Non-Hyperglycemic patient by 1.95 day. And also, high blood loss in Hyperglycemic patient. This reflect the increasing of cost and burden of these patients.

CONCLUSION:

post-operative hyperglycemic patients did not develop higher complications compared to euglycemic patients, however length of stay was more among hyperglycemic patients by 1.95 days compared to euglycemic patients.

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