

Commentary for distribution and risk factors of postoperative endophthalmitis in people with diabetes

Diabetes mellitus is a common metabolic disease due to dysregulated glucose metabolism that can compromise the immune system, predisposing affected individuals to an increased risk of infection.^[1] The Endophthalmitis Vitrectomy Study investigated different outcomes between diabetic and non-diabetic patients and recommended early vitrectomy for diabetic patients. However, very few studies have focused on diabetic patients to identify the risk factors including demographics, perioperative characteristics, surgical background, and complications associated with post-cataract endophthalmitis.

We congratulate the authors for their original article titled "Distribution and risk factors of postoperative endophthalmitis

in people with diabetes."^[2] The authors have conveyed that the important risk factor that is rapid reduction of preoperative blood sugar level had predisposed to higher proportions of postoperative endophthalmitis than those with normal preoperative blood sugar levels. Therefore, it is preferable to avoid surgery when rapid reduction of blood sugar levels may be required in single-eyed and immunocompromised patients, although immunosuppression has not been studied as a subgroup analysis. The authors have proposed possible reasons for increased odds of males developing postoperative endophthalmitis but this could also be likely if the males constituted a larger proportion of the overall study cohort of patients who underwent cataract surgery.

Saeedinia S *et al.*^[3] found persisting hypertension for at least 6 months prior to surgery associated with a higher rate of surgical site infection. They explained that hypertension could contribute to higher intraoperative bleed and reduced perfusion of soft tissues which could impair wound healing

as the reason for the increased rate of infection. Details about the duration and management of hypertension could provide more information regarding its association with postoperative endophthalmitis.

Silpa-archa S *et al.*^[4] studied the association of diabetes with postoperative endophthalmitis and found recent fasting blood sugars, use of insulin therapy, presence of diabetic retinopathy, and severe non-proliferative and proliferative diabetic retinopathy to be significantly associated with univariate analysis and insulin therapy as the only risk factor found on multivariate analysis. Specifications regarding the duration and type (1 or 2) of diabetes in the study cohort, the range of preoperative hyperglycemia along with the treatment strategies used to rapidly reduce the blood sugars before surgery, and also the presence of diabetic retinopathy can provide additional insight about other associations such as insulin use and severity of diabetic retinopathy that have been previously reported as risk factors for postoperative endophthalmitis.

Intraoperative and postoperative factors such as increased corticotrophin-releasing hormone (CRH) and cortisol levels from metabolic stress can create a state of transient insulin insufficiency and hyperglycemia suggesting a need for better perioperative glycemic control to prevent infection.^[5] Postoperative glucose levels have earlier been reported as the risk factor for the development of surgical site infection.^[6] The authors have mentioned their limitations about the absence of HbA1c in the study parameters. Details regarding HbA1c and postoperative glycemic status including fasting or postprandial blood sugar levels can be used to analyze their association as risk factors. A subgroup analysis for acute and delayed postoperative endophthalmitis can also improve the understanding regarding perioperative glycemic control in diabetic patients undergoing cataract surgery.

Molecular biology techniques such as polymerase chain reaction can increase the laboratory rate of identifying the causative pathogen by 20% compared to conventional microbiological methods making such techniques very useful for the diagnosis and management of endophthalmitis.^[7] Coagulase-negative *Staphylococci* have been the most commonly reported cause of acute and delayed postoperative endophthalmitis.^[8] The authors have found *Staphylococcus epidermidis* more frequently in the non-diabetic group which may extend explanation for altered ocular flora in diabetic versus non-diabetic patients.

Coronavirus disease-19 (COVID-19) pandemic has been reported to have started in India since January 2020 and its effects have been multifaceted. While both the COVID-19 infection and its treatment with systemic steroids can cause hyperglycemia, there have also been increased reports of post-COVID endophthalmitis. As the study cohort includes patients from the pandemic era 2020–2021, the authors can consider a subgroup analysis of the patients who may have developed de novo diabetes following COVID-19 and their association with postoperative endophthalmitis for future studies. Hadayer A. *et al.*^[9] have hypothesized the use of masks that could redirect exhaled air toward the eyes leading to contamination as contributory to the development of post-intravitreal injection endophthalmitis and isolated *Staphylococcus epidermidis* from the used masks. Since *Staphylococcus epidermidis* was the most commonly identified causative microorganism in the study, it would be interesting to learn about its relation to post-cataract endophthalmitis in the more recent subgroup of patients included in the study.

The data from the study add a new perspective for diabetes control in the perioperative period to prevent the risk of endophthalmitis. Future studies can evaluate the complete

perioperative glycemic control as well as the pandemic-related factors that could help prevent the development of this complication in the diabetics undergoing cataract surgery.

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