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Commentary

Role of Fluorescein Angiography in Ophthalmology

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DESCRIPTION

A specialized camera is used in the diagnostic technique known as Fluorescein Angiography (FA), which records the blood flow in the retina, the light-sensitive tissue located at the back of the eye. No physical contact with the eyes is made during the examination. Before starting the process, eyes will be dilated. An important indication of the visual prognosis for individuals with retinal vein blockage is the Non-Perfusion Area (NPA) of a retina. Therefore, NPA management will benefit from automated detection. There have been reports of deep learning algorithms for NPA identification in fluorescein angiography.

However, traditional deep learning algorithms do not sufficiently handle the prediction uncertainty, which might result in missing lesions and make it more challenging to collaborate with medical practitioners. The accuracy of prediction and dependability of uncertainty in several models and uncertainty measurements were observed. Deep segmentation models with uncertainty estimate using Monte Carlo dropout were created (standard deviation and mutual information).

The study includes 403 Japanese retinal vein occlusion fluorescein angiography pictures. The average Dice scores for U-Net, PSPNet, and DeepLabv3+ were 65.6 9.6%, 66.8 12.3%, and 73.6 9.4%, respectively. U-Net had the highest ratings for uncertainty, which indicates that model complexity may degrade the accuracy of uncertainty estimates. High uncertainty values were caused by missed lesions and erratic prediction. The findings suggested that uncertainty estimates might reduce the likelihood of undetected lesions.

To ascertain if the simulating Widefield flowing OCT angiography field of view was adequate for detecting NV in Proliferative Diabetic Retinopathy (PDR), areas of Neo Vascularization (NV) in PDR on Ultra-Wide Field (UWF) Fluorescein Angiography (FA) were found. One should observe the effective treatment of an anaphylactic shock-related severe adverse event that occurred while intravenous fluorescein angiography in an outpatient clinic. After receiving an intravenous infusion of sodium fluorescein dye for retinal angiography, a 72-year-old man experienced a serious, life-threatening consequence.

Fluorescein was injected intravenously, and three minutes later the patient experienced circulatory shock, apnea, and syncope. Fortunately, after receiving early, rigorous resuscitation with fluid and inotropic support, he recovered without any neurologic aftereffects. There is a possibility of anaphylactic shock as a potentially deadly fluorescein angiography consequence. Therefore, when fluorescein angiography is done, one should be aware of the probability of this adverse occurrence and ready to handle it. To reduce morbidity and prevent fatality, rapid intense medical resuscitation is necessary when it occurs.

Biguanide hypoglycemic drugs like metformin are frequently prescribed to people with diabetes mellitus. It is still not quite apparent in clinical practice when metformin should be stopped before to Fundus Fluorescein Angiography (FFA). Before FFA, several endocrinologists advise stopping metformin. Ophthalmologists don't always follow this stance in their clinical work. Physicians and patients may argue as a result of this predicament.

CONCLUSION

There is a possibility that the mismatch may result from a misinterpretation of the contrast chemicals utilized in FFA. Metformin must be halted for angiography using iodine contrast agent because to the increased risk of CIN, however no cases of CIN have been documented with FFA using fluorescein sodium. As a result, they contend that FFA is safe for diabetic patients on oral metformin and that stopping the medication prior to the exam is not essential.

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