CCLG RESEARCH PROJECT UPDATE

A study to assess the usefulness of using a dye in combination with keyhole surgery in children with cancer

Project title: An open label, single centre, single arm, prospective feasibility study evaluating the effectiveness of near-infrared fluorescence (NIRF) using indo-cyanine green (ICG) in intra-abdominal or intra-thoracic minimally invasive surgery (MIS) in paediatric oncology

Lead researcher: Mr Max Pachl, Birmingham Children's Hospital

Project Stage: Complete (August 2022)

Funded by: CCLG and Bethany's Wish, Freddie's Fight, The Georgie B Fund and Daniel's Rainbow Fund

ABOUT THE PROJECT

Indo-cyanine green (ICG) is a type of dye that has been used in children and adults for many decades. It has been used over the past few years in combination with a type of light during surgery in adults and children to make tumours or organs easier to see. It has not been used in surgery for children with kidney or other cancers before, but has been used to find areas where cancers have spread to the lungs. Surgery forms an important part of the treatment of some children with cancer, including those with kidney cancer and in those where the cancer has spread to the lungs.

This project will aim to see if surgeons can use this dye safely and effectively in children with cancer to improve surgery. Children will be considered for this project if they have kidney cancer, other types of cancer that can affect muscles, or if they have a cancer that has spread to the lungs. Additionally, they must be due to have an operation to remove some or all of the cancer as part of their normal treatment. During the surgery, the dye will be injected (either into the tumour or into the blood stream) and then a special type of light will be used that may make the cancer easier to see.

The research team at Birmingham Children's Hospital, led by Mr Max Pachl, will look at whether the dye increases the amount of lymph nodes which can be removed during surgery for kidney cancer or can help with surgery for other cancer types. This will show whether ICG makes surgery more able to take out the entire tumour, meaning a safer and more effective surgery.

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PROGRESS

The study involved 17 patients and found that the ICG dye enables a better and easier operation, which could mean that surgeons are able to remove more of the cancer than they were before. It also means that surgeons may find and remove areas that the cancer has spread to whilst being able to avoid damaging important structures.

Mr Max Pachl found that, whilst the dye did not work well for patients that had had a lot of chemotherapy, it was very helpful for neuroblastoma and for cancer that has spread to the lungs. It was even more useful to show lymph nodes to remove when operating on kidney tumours.

The findings so far have been shared nationally and internationally. Multiple hospitals across the UK and Europe have started to use the ICG dye to help show lymph nodes in kidney cancer surgery, like the researchers did in this study.

WHAT'S NEXT?

This project found more out about whether ICG dye can help surgeons remove tumours and which cancers it works on. The next step is a clinical trial, which started in August 2022. The trial, funded by The Little Princess Trust, is looking at whether surgery with the dye is better than surgery without. See more at https://tinyurl.com/GlosurgeryTrial

This work has also led to another Little Princess Trust funded study, which looks at whether ICG dye can clearly show the difference between healthy kidney tissue and tumour tissue. The team will look at the border between normal and cancerous tissue with a microscope to see if there is a visible difference in amount of dye in cells. See more at https://tinyurl.com/NephrogreenStudy

Bethany's Wish
Wilms' tumour research fund

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Daniel's Rainbow Fund

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