Lay Summary

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Analysis of senescence in pituitary adenomas

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Cancers and tumours contain cells that can grow fast (referred to as cancer cells), and others that do not grow at all, which are called *senescent cells*. Senescent cells have not been studied very much in cancer, however, research from the last 5 years has shown that senescent cells produce and release very potent biological factors that promote and fuel growth of neighbouring cancer cells. These tumour-promoting activities have been shown in a variety of cancers such as liver cancer and leukaemia. More recently, we have demonstrated that senescent cells are important in the development of craniopharyngioma in children, a clinically aggressive brain tumour. Therefore, there is much interest among researchers, clinicians and pharmaceutical companies in assessing whether killing senescent cells can stop or delay tumour/cancer growth and progression.

The proposed study aims to clarify the role of senescent cells in a tumour called pituitary adenoma. These tumours arise from a hormonal gland that sits at the base of the skull, just underneath the brain. These are usually benign tumours, but in up to 15% of patients the tumours behave aggressively, with rapid growth and resistant to treatments. In this study, we will explore whether using novel drugs, we can kill the senescent cells in pituitary adenomas. If successful, the finding will lead to new clinical trials and novel therapies for the patients.