Establishment of a culture method of the feline mammary tumor organoid

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【Backgrounds】
Mammary gland tumors are the third most common tumor in cats, and in contrast to the canine mammary gland tumors, which are mostly benign, the malignancy of the cancer is high, and the survival rate is low. Besides postoperative recurrence of the cancer is more likely to occur, resulting in a lower quality of life for the affected cats and the burden of treatment costs on the owners due to long-term treatment. Because there are few cell lines available for feline mammary tumors, little research has been done to improve their treatment. The organoid culture method can reproduce cancer epithelial structures in vivo on a three-dimensional culture dish and is considered to be a breakthrough in basic and clinical cancer research as a way to maintain cell diversity and stem cell nature. Therefore, the aim of this study was to establish a feline mammary tumor organoid culture method using mammary tumor-affected cats.

【Methods and Results】
Tumor tissues surgically removed from mammary tumor diseased cats were used for organoid culture. The generated organoids showed different histological features and reproduced the epithelial structure of the original tumor tissue. The response to anti-cancer drugs was also different in each organoid. In addition, strains with high HER2 expression showed reduced cell viability at lower concentrations with lapatinib treatment.

【Conclusion】
These findings revealed that feline mammary tumor organoids might become a useful tool to investigate the mechanisms of pathogenesis and treatment of feline mammary tumors.