Research cooperation agreement for nanoparticulate radiopharmaceutical containing iso-sulphane blue for sentinel lymph node detection in breast cancer

- SCHEDA
- APPROFONDIMENTI

Identificativo proposta:TOTR20211005002 **RICHIEDI MAGGIORI INFORMAZIONI**

A researcher from a reputable university located in Izmir, has developed a novel method that enables diagnosis of breast cancer at an early stage. This method enables the detection of tumor before metastases and helps medical practitioners to decide on corrective actions and eliminates unnecessary dissections or surgical interventions. Research cooperation agreement with an industrial partner in pharma sector is sought to carry out clinical operations leading to an industrial prototype.

A researcher from pharmaceutical technology of a reputable university in Izmir, Turkey has developed a novel technique to track down the tumor causing breast cancer at an early stage. Breast cancer is the most common malignant tumor in women, accounting for 31% of cancers in women. The histopathology status of the sentinel lymph node in breast cancer plays a role in directing chemotherapy and is important in terms of prognosis. Breast cancer usually metastasizes to auxiliary lymph nodes via lymphatic pathways. Therefore, it has been recommended to remove the tumor tissue and all the auxiliary lymph nodes in breast cancer operations. However, in patients who have auxiliary lymph nodes removed, complaints of varying severity are observed; *limitation of shoulder movements *edema in the arm, *pain, *numbness-tingling sensation, *weakness. Studies show that 70-90% of patients with breast cancer undergo auxiliary dissection unnecessarily. Today, with the awareness of patients and the development of imaging techniques, the rate of early-stage (stage-0 and stage-1) breast cancer is increasing. This means that the proportion of clinically negative patients with axilla has increased. Sentinel lymph node (SLN) is defined as “the first lymph node to drain lymphatic fluid from tumor tissue” (guard lymph node). Lymphatic metastasis occurs first in the SLN and then to other lymph nodes in a step-wise fashion. Theoretically, if the SLN does not contain metastases, other lymph nodes are also negative.Therefore, if the result is negative when the SLN is removed during the operation and sent for pathological examination, unnecessary auxiliary dissection may not be performed. To determine the SLN today; SLN mapping with preoperative lymphoscintigraphy, application of blue dye just before surgery, and intraoperative gamma probe (IGP) are used. These methods can be used separately or together. By combining the methods together, much higher success rates are obtained. The SLN will be both blue and radioactive with a single application to the patient during the operation with a radiopharmaceutical containing a colloidal blue dye. 2-6 hours before surgery, radiolabeled nanocolloid is injected into the patient in the nuclear medicine department through different administration routes such as intratumoral, peritumoral and sub-dermal. In order to locate the SLN after radiocolloid injection, a dye (3-5 mL of 1% iso-sulphane-ISF solution) is injected around the primary tumor of the patient in the operating room during the operation. By following the dye carried by lymphatic drainage, the lymph node that turns blue first and has the highest radioactivity is detected and removed. It is sent After about 5 -10 minutes of massage, an incision is made from the skin. The blue-stained lymphatic channel is identified and followed to find the blue-stained lymph node(s). The first node with both the highest radioactivity and blue staining is called the SLN and is excised for pathological examination. As a result, the mapping work for the SLN biopsy procedure will be carried out easily and quickly without the need for an additional application to the patient before the operation. Radiopharmaceuticals showed approximately 100 times more uptake than even the kidney. As a result of the studies carried out, 20 minutes after a single dose of drug administration, blue nodes with radioactivity at a dose that can be easily detected with IGP and easily distinguishable from the surrounding tissue were obtained. Additional research is needed to obtain a pilot prototype and after clinical trials, an industrial prototype is expected. A partner active in the pharma sector in collaboration with a research hospital is essential both for clinical trials and for obtaining the pilot prototype under the research cooperation agreement.

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