

Title of the article:

A foreign body reaction to Surgicel® in a lymph node diagnosed by endobronchial ultrasound-guided transbronchial needle aspiration

Abstract:

Surgicel® is an absorbable sheet of oxidized cellulose polyanhydroglucuronic acid polymer used as an haemostatic in cardiovascular and thoracic surgery (1). In some cases the retained material may cause foreign body granulomatous reactions and simulate tumour recurrence, an abscess, an haematoma or an infection (1-5).

We report the case of a 55-year-old patient who was operated of a lung adenocarcinoma. In the thoracic CT scan one year after the surgery, a right paratracheal lymph node was detected, so endobronchial ultrasound-guided transbronchial needle aspiration (EBUS-TBNA) was performed suspecting recurrence of the tumour. The cytology results of the lymph node showed a non-necrotizing granulomatous reaction secondary to Surgicel®, used as an haemostatic during the surgery.

The objective of presenting this case is to consider foreign body reaction to Surgicel® in the differential diagnosis of postoperative suspicion of neoplastic recurrence, and on the other hand to note that EBUS-TBNA enables diagnosis.

Key-words:

Surgicel®, EBUS-TBNA, foreign body reaction, lung cancer

Key Messages : Complications associated with Surgicel® use are rare, but foreign body granulomatous reactions can occur and simulate a tumour recurrence, an abscess, an haematoma or an infection.

Granulomatous reaction to this material should be considered in the differential diagnosis of suspected lung tumour recurrence in surgically treated patients.

Introduction:

Surgicel® (Ethicon, North Ryde, NSW, Australia) is an absorbable oxidized cellulose mesh of a vegetal polyanhydroglucuronic acid polymer used in surgery as an haemostatic agent to control small bleeding, to optimize ligatures coagulation or when electrocoagulation is not enough (1). It is mainly used in cardiovascular surgery but also in other types of interventions. The material is deposited on the surgical bed and is usually reabsorbed during the following 7-14 days. In recent years some complications have been described secondary to compression of surrounding anatomic structures causing formation of granulation tissue as a foreign body reaction (2). We describe the first case of a surgical patient with history of pulmonary neoplasia in whom a paratracheal lymph node suspicious of tumour recurrence was detected one year after the surgery being diagnosed by endobronchial ultrasound-guided transbronchial needle aspiration (EBUS-TBNA) of foreign body reaction to Surgicel®.

Case History:

We report the case of a 55-year-old patient, active smoker without occupational exposure who, after the discovery of a pulmonary nodule on thoracic CT, underwent a right upper lobectomy with lymphadenectomy that was diagnostic of pulmonary adenocarcinoma (pT1b pN0). All the lymph nodes sampled in the surgery (10R, 11R, 7, 4R and 9R) presented sinus histiocytosis and anthracosis and were negative for metastasis. Lymph node from region 4R had fragments of bronchial cartilage introduced by endobronchial ultrasound-guided transbronchial needle aspiration performed previously (Fig. 2A). One year later, during outpatient thoracic surgery monitoring, thoracic CT evidenced a low right paratracheal lymph node (Fig. 1A). With the suspicion of pulmonary neoplasm recurrence, EBUS-TBNA was performed (Fig. 1B). The lymphadenopathy cytology showed a non-necrotizing granulomatous reaction secondary to amorphous fragments of an acellular material that was birefringent under polarized light, compatible with Surgicel® (Fig. 2B). The culture and PCR testing for *M. tuberculosis* were negative. At 6 months of follow-up, no significant changes in the lymph node were observed.

Discussion:

Surgicel®, an absorbable mesh of polyanhydroglucuronic acid-oxidized cellulose polymer, is used in surgery as an haemostatic agent to control small bleeding, to optimize ligatures coagulation and when electrocoagulation is not enough (1). Surgicel® acts as an anchor for platelets to initiate adhesion, aggregation and coagulation (3). Absorption begins at 24 hours and depends on the amount of material used. Surgicel®'s fibrous residue is phagocytised by macrophages 48 hours after implantation, although a period of four to eight weeks is required for it to be completely absorbed. Since it began to be used, cases that simulate tumour recurrence have been described in neurosurgery, gastrointestinal and cardiac surgery, forcing additional examinations to determine an aetiology of foreign body granulomatous reactions (1-4). To date, however, there have been no reported cases of suspected recurrence of pulmonary neoplasm.

The dissolution of Surgicel® depends on the amount used and where, along with environmental factors. Only the minimum amount necessary should be used; indeed, most complications reported in the literature are related to an excess of the material (1). Surgicel® has an uronic acid component that can increase inflammation of the surrounding tissue and delay healing of the injury (5). Complicated degradation reactions due to tissue damage can sometimes occur, such as provisional matrix formation, acute or chronic inflammation, the appearance of granulation tissue and creation of foreign body reactions leading to the formation of a fibrous capsule (3). It is estimated that these reactions occur in about 3% of cases (5). With current imaging technology, it is not possible to differentiate the accumulation of Surgicel® from possible tumour recurrence, haematoma or abscess. In our case, the appearance of a low right paratracheal lymph node led us to suspect recurrence of lung adenocarcinoma. We carried out EBUS-TBNA to study the lymph node.

Conclusion:

The objective of this case report is to present Surgicel®, a safe local haemostatic agent used in thoracic surgery, which reduces complications after surgery and therefore health care costs (5), which in a small percentage of cases may lead to complications or the appearance of lesions that can simulate abscesses or, as in the present case, nodal tumour recurrence. In this sense, granulomatous reaction to this material should be considered in the differential diagnosis of suspected lung tumour recurrence in surgically treated patients. Finally, EBUS-TBNA was an useful diagnostic approach.

References:

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