TECHNICAL REPORT

Doxycycline Treatment of Groin Lymphatic Fistulae Following Arterial Reconstruction Procedures

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Introduction

Lymphocutaneous fistula as a complication of lower limb arterial reconstruction was first reported in 1978.1,2 The condition appears to affect 1.2%–8% of operated patients.3–7 Although spontaneous healing may occur, more effective methods of management are required to reduce hospitalisation, costs and the risk of wound infection.

Doxycycline was originally used to treat malignant pleural and pericardial exudates,8 as well as bronchopleural fistulae.9 The aim of the work was to evaluate the efficacy of doxycycline, a topical sclerosing agent, in treatment of lymphocutaneous fistulae of the groin following arterial reconstruction procedures of the lower extremity.

Material and Methods

Between January 1997 and December 1999, 692 primary lower limb arterial reconstructive procedures were performed using the inguinal approach. Lymphocutaneous fistulae (defined as continuous leak of clear, transparent and sterile fluid) occurred in 19 patients (2.7%), (14 males and five females, median of age 66 years (range: 56–78 years)). All of the patients underwent primary groin incisions.

Ten fistulae developed in wounds following femoropopliteal bypass graft with the use of autogenous vein, four followed aorto-bifemoral bypass grafting, three followed unilateral ilio-femoral bypass with the use of prosthetic graft, and two followed extra-anatomic femoro-femoral bypass with the use of the prosthetic graft. In all cases bacteriological studies performed immediately after diagnosis proved to be negative.

The patients were divided into two groups and the choice of treatment method was based on the individual surgeon’s decision. The first group (n = 11) was treated with topical doxycycline. Patients with persistent drainage (n = 7) received once daily 100 mg doxycycline hydrochloride solution in standard 5 ml vial (Doxycyclini, Polfa Tarchomin, Poland). The solution was applied directly into the drain, followed by clamping of the drain for 15 min, and then suction continued. In patients (n = 3) in whom the drain was removed the same dose of doxycycline was applied with metal cannula into the fistula through a channel created by the drain. One patient without primary drainage received doxycycline injected via the cannula inserted into the orifice of the fistula. The topical agent was administered once a day for the several consecutive days, until the amount of the aspirated fluid was less than 20 ml. Non-systemic antibiotics were administered.

In the second group (n = 8) the treatment consisted of application of compressive dressing in the groin, immobilisation and elevation of the involved extremity and prophylactic antibiotic therapy with cefradine (Sefril, Polfa Tarchomin, Poland; dosage: 1.0 g i.v. twice daily).

Results

Fistulas healed in 10 out of 11 patients treated with doxycycline. The median healing time was 3 (range
2–4) days. One wound was infected and successfully treated with antibiotic.

In the group of eight patients treated conservatively the fistulae healed spontaneously in six of them; median of healing time was 17 days (range 7–26). Infection of the postoperative wound occurred in one case, which was successfully treated with the guided antibiotic therapy.

There was no statistically significant differences in recovery rates, but the time of complete healing was significantly shorter in group of patients treated with topical doxycycline (p<0.001).

The three cases in whom the fistula did not heal underwent reoperation. The wound was closed over a doxycycline-impregnated fibrin sponge. All three healed subsequently after.

One patient died on the 20th postoperative day due to the acute left ventricular failure in course of myocardial infarction. In the remaining patients follow-up studies performed 3 months after discharge revealed no recurrences.

Discussion

Doxycycline is a semi-synthetic derivative of natural 5-hydroxytetracycline with a broad-spectrum effects against Gram-positive bacteria, treponema, chlamydia, rickettsia and mycoplasma. This agent induces an inflammatory process resulting in obliteration of the injected space.

Folk and Musa described good results with doxycycline in two of three retroperitoneal lymphoceles following lymphadenectomy. In 1997 Cannon and Walker described a case of permanent healing of lymphocele surrounding prosthetic vascular graft following a single dose of small amount of the tetracycline solution. McShannic and O’Hara confirmed in their series that sclerosing agents might be helpful in treatment of lymphocutaneous fistula. They proved that more rapid and durable healing of LF could be achieved by surgical ligation of lymphatic vessels assisted by topical application of tetracycline or doxycycline solution.

The method of treatment recommended by us in cases of lymphatic fistulae consisted of doxycycline application through the drain left in the wound or through the outlet of the fistula, and resulted in relatively rapid healing of the wound. One treatment failure (with the agent administered through the fistula) probably resulted from the partial leak of the agent; therefore, doxycycline might have not reached the damaged lymphatic vessel. It should be underlined that in three cases with treatment failures following other methods, favourable outcome has been achieved after application of fibrin sponge impregnated with doxycycline.

Conclusions

Local application of doxycycline may be an alternative or a supplement procedure to the surgical techniques.

References


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