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CLINICAL REPORT

Efficacy of Infliximab for Hidradenitis Suppurativa: Assessment of Clinical and Biological Inflammatory Markers

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Treatment of hidradenitis suppurativa (HS) is often unsatisfactory. The efficacy of infliximab for treatment of the disease has been suggested. The main objective of this study was to evaluate the efficacy and side-effects of infliximab in the treatment of moderate to severe HS, resistant to local and systemic treatments. The secondary objective was to determine whether inflammation blood test results were changed. A retrospective monocentric study of all the patients seen consecutively for HS and treated with infliximab was performed. A median of six intravenous infusions (range 3–19) were performed. The end-points were self-improvement of HS (globally and in terms of pain, seeping and quality of life). The condition of six of seven patients improved (by nearly 50%) and none was aggravated. Adverse effects occurred in two patients; eczematous eruption in one case and cervical abscess in another case. We found no significant changes in inflammatory blood marker values. In conclusion, infliximab therapy was shown to be efficient and well tolerated in six of seven patients with HS resistant to previous therapy in our series. This was in agreement with pre-existing literature showing that 52 of 60 patients (87%) were improved after infliximab therapy. ***Key words: hidradenitis suppurativa; quality of life; infliximab; anti-tumour necrosis factor; adverse effect.***

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Hidradenitis suppurativa (HS) is a chronic, suppurative, cutaneous disease of areas of the body with apocrine glands. It can be physically debilitating and have a considerable effect on quality of life (1). It mainly affects women, usually starts in adolescence or shortly thereafter, and is promoted by smoking and obesity (2–5). Its prevalence of 0.3–4% is probably underestimated because of confusion of the differential diagnosis with acne or folliculitis. Clinically, HS is a coalescence of painful, inflammatory subcutaneous nodules that can form abscesses, draining sinuses and scarring. The main areas affected are the axillary areas, the inguinal areas, the groin, and the perianal and sub-mammary areas. The evolution of HS is chronic with acute recurrences.

The pathophysiological features of HS are controversial. Recent studies suggest that HS is linked to hyperkeratosis of the follicular gland resulting in its occlusion or a "dilatation" and an inflammation of the cystic cavity (6–9). The inflammatory phenomena induce a follicular rupture with eruption of the contents in the dermis and intensification of the inflammatory reaction. Thus, the implication of the apocrine glands, long thought to be the origin of the disease, is in fact only secondary to the local inflammation by contiguity. The subcutaneous nodules, elementary lesions of the disease, are initially aseptic and secondarily colonize or become infected with various bacteria, especially *Staphylococcus aureus*.

The usual treatments for HS, including topical antiseptics, zinc gluconate, orally administered antibiotics, isotretinoin, cyproterone acetate and surgical excision, are often unsatisfactory or induce only transitory improvement in severe cases (10). A few case reports, small series and one trial have indicated a certain efficiency of infliximab (11–23). Several other reports on this subject have been reviewed (24).

The primary objective of this study was to evaluate the efficacy of infliximab in seven patients with moderate to severe HS resistant to local and systemic treatments. The secondary objective was to determine whether inflammation blood test results were changed with infliximab.

METHODS

This retrospective study included all patients consecutively receiving infliximab for moderate to severe HS (Hurley score II–III) that was resistant to several local and at least two, 3-month-long systemic treatments in the dermatology department of the Hospital at Tours between 2006 and 2009.

Data were collected at inclusion on demographic information, disease duration, former treatments, initial severity of the disease as evaluated by the Hurley score, extent of disease, quality of life as estimated by the Dermatology Life Quality Index (DLQI), blood test measurements (C-reactive protein (CRP) level and neutrophil count) and side-effects. In May 2009, patients underwent re-testing, including by the DLQI and self-evaluation of improvement or aggravation (percentage of improvement globally, in pain and in seeping on a visual analogue scale, scores ranging from 0 to 100 mm). The principal outcome criterion was percentage improvement globally, in

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seeping, in pain and in DLQI score as assessed by the patient. These data were expressed in medians and ranges. The secondary outcome criterion was change in both inflammation serum markers (CRP level > 10 mg/l and neutrophil count > 7,000/mm^3 were regarded as abnormal values).

RESULTS

We included 7 patients (4 women), mean age 37 years. Their main features are shown in Table I. Patients had all previously received at least two general medications (antibiotics, isotretinoin, cyproterone acetate, zinc gluconate). The mean disease duration was 12 years. Patients had received a median of 6 perfusions (range 3–19) of infliximab, 5 mg/kg, at weeks 0, 2, and 6 and then every 8 weeks. The mean follow-up was 72 weeks. The Hurley score was II for six patients and III for one patient. The initial median DLQI score was 18 (range 10–19).

Improvement in DLQI was noted in 6 of 7 patients, with a median DLQI score variation of 10 (range 0–15). The final median score was 8 (range 0–18) (Table II). Six of seven patients noted global improvement, with no aggravation. The median change was 70% for global improvement, 70% for pain, and 70% forsee page (Table II).

Adverse effects were observed in two patients, one with an eczema-like eruption after 3 perfusions, which led to treatment interruption, and one with a pretragian abscess, which occurred after three perfusions, after which treatment was stopped.

We found no significant changes in inflammatory blood marker values. The median CRP level was 6 mg/l (range 1–93 mg/l) before treatment and 5 mg/l (range 1–131 mg/l) after treatment. The median neutrophil count was 8.2×10^3/mm^3 (range $5.3–12.9 \times 10^3$/mm^3) before treatment and 4.9×10^3/mm^3 (range $4.5–12.8 \times 10^3$/mm^3) after treatment (Table II).

DISCUSSION

This open study of seven cases of moderate to severe HS resistant to other treatment demonstrates the efficacy of infliximab as judged by symptoms and improvement of DLQI. Adverse events were mild to moderate. Inflammatory markers (CRP and neutrophils) were not significantly changed with treatment, and are probably not good measures of the efficacy of infliximab.

Infliximab is a chimerical human/mouse antibody that links with great affinity to the soluble and transmembrane forms of tumour necrosis factor α (TNFα) and inhibits its functional activity. It is also used for rheumatoid arthritis, Crohn's disease, spondylarthritis, psoriasis and psoriatic arthritis. When used to treat Crohn's disease, infliximab reduces local tissue levels of TNFα, decreases the inflammatory cell infiltrates and lowers the level of interleukin 6. Patients receiving infliximab for rheumatoid arthritis showed lowered inflammatory blood values. Infliximab was efficient for HS associated with Crohn's disease. Various case reports showed infliximab efficient for treating HS alone (19–21, for review see 24).

One report described the efficacy of infliximab according to Sartorius score and tolerance in 7 patients (19); 5 patients showed improvement after 6 weeks, but only 2 of 5 after 10 weeks. The tolerance was considered mediocre, with one occurrence of colon cancer, an allergic reaction and one multifocal motor neuropathy. A second retrospective trial of 5 patients studied disease activity after 5 months' treatment (20). The improvement was quick and significant, with few side-effects. Another trial of 6 patients during 6 months showed good efficacy with few side-effects (21). In one trial, 9 of 15 patients showed 25–50% improvement and 4 showed more than 50% improvement (23). Of 75 patients in the literature, 65 showed at least moderate improvement with therapy (24).

As HS is a suppurative disease, initially sterile but quickly colonized by various bacteria, and with an increased risk of squamous cell carcinoma, infliximab must be used with care, with a regular clinical examination and precise recommendations to the patient and the general practitioner (25).

Two patients showed high inflammatory blood test values (CRP and neutrophils) at inclusion, without infection. Values for the other blood markers were close to normal. Thus, we were not able to study the treatment efficacy of infliximab on reducing values of inflammatory blood markers. This criterion was seldom used in other studies. Mekkes et al. (22) showed a decrease in CRP level in patients with HS after one perfusion of infliximab. Our study suggests that CRP is not a good

Table I. *Clinical data for seven patients with hidradenitis suppurativa*

Patient/age/sex	Disease duration (years)	Previous treatments	Affected areas	Hurley stages	Infliximab infusions
1/47/F	25	Cyproterone acetate, zinc gluconate	Axilla, inguinal folds, perianal	II	6
2/45/M	24	Antibiotics, isotretinoin, zinc gluconate	Axilla, inguinal folds, perianal	III	5
3/45/F	7	Antibiotics, zinc gluconate	Axilla, inguinal folds, gluteal areas	II	19
4/22/F	3	Antibiotics, zinc gluconate	Inguinal folds, perianal, perineum	II	14
5/29/M	11	Antibiotics, isotretinoin, zinc gluconate	Axilla, inguinal folds, perineum, cervical	II	3
6/34/M	8	Antibiotics, isotretinoin, zinc gluconate	Inguinal folds, perineum	II	6
7/36/F	6	Antibiotics, zinc gluconate	Inguinal folds, gluteal areas	II	3

Table II. *Dermatology Life Quality Index (DLQI) patient-assessed improvement and biological marker values with infliximab treatment for hidradenitis suppurativa*

Patient	DLQI score		Global improvement (%)	Pain* improvement (%)	Improvement in seeping (%)	CRP (mg/l)		Neutrophils ($\times 10^3$/mm^3)	
	Before treatment	After treatment				Before treatment	After treatment	Before treatment	After treatment
1	11	0	90	95	90	7	3	5.3	4.9
2	18	8	70	70	75	93	131	11.7	14.3
3	18	3	80	80	70	6	5	7.6	4.8
4	10	4	70	80	80	1	6	6.9	4.6
5	18	18	0	0	0	3	6	8.4	12.8
6	19	11	25	10	25	34	1	12.9	4.5
7	18	16	50	50	50	1	1	8.2	5.4

*Pain measured on a visual analogue scale (0–100 mm).
CRP: C-reactive protein.

clinical marker of infliximab efficacy for HS. According to Matusiak et al., the serum level of interleukin 2 receptor, although not used in routine practice, may associate better with disease activity (26).

The authors declare no conflict of interest.

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