Disclosure of interest

The authors declare that they have no conflicts of interest concerning this article.

References

[1] Younes M, Jalled A, Aydi Z, et al. Socioeconomic impact of ankylosing spondylitis in Tunisia. Joint Bone Spine 2010;77:41–6.
[2] Vander Cruyssen B, Munoz-Gomariz E, Font P, et al. Hip involvement in ankylosing spondylitis: epidemiology and risk factors associated with hip replacement surgery. Rheumatology 2010;49:73–81.
[3] Chen HA, Chen CH, Liao HT, et al. Factors associated with radiographic spinal involvement and hip involvement in ankylosingspondylitis. Semin Arthritis Rheum. 2010 Sep 25. doi:10.1016/j.semarthrit.2010.07.008.

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Biotherapy and rheumatoid arthritis: A medico-economic evaluation from 2008 French Hospital Database

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1. Introduction

In France, as for several other countries, guidelines have highlighted the place of biotherapy in rheumatoid arthritis (RA) [1,2]. The access to biotherapy is regulated in France according to the status of the biotherapy [3], and to the contract of the good use of expensive treatments [4]. Little information is currently available concerning the national use of biotherapy. Our objective was to describe the prescription of biotherapy using the 2008 French Hospital National Database based on the French "Programme de médicalisation du système d'information" (PMSI).

2. Methods

The following biotherapies, abatacept, adalimumab, etanercept, infliximab, and rituximab, administered during hospital stays were extracted from the national database of hospitalizations of the PMSI and from the file which contains the statement of costly molecules for the year 2008. The extracted files were then merged using the patients' unique identification number (n = 94737) [5].

Table 1
The 2008 use of biotherapy administered during hospitalizations for rheumatoid arthritis in France, overseas departments included.

Biotherapy	Abatacept	SC Biotherapy	Infliximab	Rituximab	Switch	All patients
Patients						
Number	852	280	3156	1756	330	6374
(%)	(13)	(4)	(50)	(28)	(5)	(100)
% women	79	76	74	78	82	77
Age: mean ± SD	59 ± 11	57 ± 14	57 ± 13	58 ± 13	56 ± 14	57 ± 13
Hospitalizations						
Number	5734	326	15,380	3516	2202	27,158
(%)	(21)	(1)	(57)	(13)	(8)	(100)
% one-day hospitalization	92	52	92	55	52	86
Stay: mean ± SD	7 ± 4	–	5 ± 2	–	7 ± 3	4 ± 3
Stay: median (min-max)	7 (1–14)	–	5 (1–13)	–	6 (2–14)	4 (1–14)
Stay > 1 day	479	155	1199	1567	364	3764
LOS: mean ± SD	3.8 ± 5.0	6.7 ± 7.0	2.5 ± 3.9	2.9 ± 4.2	3.3 ± 4.4	3.1 ± 4.5
LOS: median (min-max)	2 (1–37)	4 (1–39)	1 (1–44)	2 (1–56)	2 (1–41)	2 (1–56)
Cost (€)[a]						
Total (%)	2,548,322 (19)	440,475 (3)	6,319,650 (48)	2,719,812 (21)	1,115,821 (8)	13,144,080 (100)
Mean	2991 ± 1970	1573 ± 1979	2003 ± 1428	1549 ± 1443	3381 ± 1930	2062 ± 1658
Median	2744	873	2037	1149	3056	1791
Administered biotherapy						
Vial						
Number	15,576	–	4842	6967	–	73,383
Mean	18.3 ± 10.1		13.9 ± 8	1.9 ± 0.1		12 ± 9
Median	18 (2–48)		13 (1–60)	2 (1–2)		9
Costs (€)[a]						
Total (%)	6,132,649 (14)	84,986 (0.2)	24,157,723 (56)	9,671,650 (22)	3,313,387 (8)	43,360,395 (100)
Mean	7198 ± 4074	304 ± 183	7655 ± 4585	2751 ± 575	–	6803 ± 4288
Median	6906	257	6873	2879	–	5758
Overall estimated costs (€)						
Total (%)	8,680,971 (15)	525,461 (1)	30,477,373 (54)	12,391,462 (22)	4,429,208 (8)	56,504,475 (100)

LOS: length of stay; SC: subcutaneous (adalimumab. etanercept); SD: standard deviation.
[a] 2010 € public tariff per disease-related group and negotiated tariff, VAT (2.1%) included, for biotherapy.

Thus, 27,125 hospitalizations have been selected. Table 1 describes the characteristics of the hospitalizations and the tariffs per biotherapy. For costs evaluation, we used the 2010 € public tariff per disease-related group for hospital stays and the negotiated included VAT (2.1%) for biotherapies, respectively. The overall costs were estimated from the tariffs.

3. Results

The number of patients under biotherapy administered during hospital stay in 2008 for an RA is 6374. Table 1 describes the main results. The most used biotherapy is infliximab (50% of patients), followed by rituximab (28%), abatacept (13%), treatment switches (5%) and subcutaneous biotherapies (4%). A second treatment with rituximab was held in 17% of treated patients, on average 9.5 ± 2.2 months after the last injection. Changes of biotherapies are most often from infliximab to abatacept or rituximab. The estimated overall cost was 56.5 million euros, of which three quarters were attributable to biotherapies. Infliximab covered 56% of the overall cost, followed by rituximab (21%) and abatacept (14%).

4. Conclusion

This is the first study which described the national use of biotherapy in RA using the 2008 PMSI data. The number of 6374 patients should be considered as the lower range of the estimate of patients treated by biotherapy since it was limited to hospital stays and did not include data from outpatient clinics.

In France, registry based data were established by the French society of Rheumatology, including most patients but mainly deals with the effectiveness and safety of these treatments [6,7]. Concerning these last two points, it is also the case for data collected in other countries [8–10].

In view of the burden of biotherapies in the treatment of RA, this type of hospital-based data is useful in the context of the tighter regulation of health expenditures. Indeed, at a national level, the evolution of the consumption of expensive medications and medical devices, funded in addition to hospital stays, is fixed by the state's policy. Indeed, their annual evolution decreased from 10% in 2009 to 3% in 2011 [4].

Disclosure of interest

The authors declare that they have no conflicts of interest concerning this article.

References

[1] Smolen JS, Landewé R, Breedveld FC, et al. EULAR recommendations for the management of rheumatoid arthritis with synthetic and biological disease-modifying antirheumatic drugs. Ann Rheum Dis 2010;69:964–75.

[2] Haute Autorité de Santé. Quick Reference Guide. Rheumatoid arthritis: Diagnostic and initial management. September 2007: http://www.has-sante.fr/portail/upload/docs/application/pdf/2009-10/ra_diagnosis_initial_management_-quick_reference_guide.pdf; Treatment of established rheumatoid arthritis. September 2007: http://www.has-sante.fr/portail/upload/docs/application/pdf/2009-10/treatment_of_established_ra-_quick_reference_guide.pdf; Medical. social and organizational aspect of management (excluding surgery and drugs). September 2007: http://www.has-sante.fr/portail/upload/docs/application/pdf/quick_reference_guide_rheumatoid_arthritis.pdf.

[3] Site assurance maladie : Base des médicaments et information tarifaire : http://www.codage.ext.cnamts.fr/codif/bdm_it/index.php?p_site=AMELI.

[4] *Journal Officiel*. Arrêté du 14 mars 2011 pris pour l'application de l'article L. 162-22-7-2 du Code de la Sécurité sociale. *Journal Officiel*; 23 mars 2011.

[5] Site Agence Technique de l'information sur l'hospitalisation : http://www.atih.sante.fr/.

[6] Société française de rhumatologie : http://sfr.larhumatologie.com/recherche/Promoteurs/LesRegistres/index.phtml.

[7] Gottenberg JE, Ravaud P, Bardin T, et al. Risk factors for severe infections in patients with rheumatoid arthritis treated with rituximab in the autoimmunity and rituximab registry. Arthritis Rheum 2010;62:2625–32.

[8] Watson K, Symmons D, Griffiths I, et al. The British Society for Rheumatology biologic registers. Ann Rheum Dis 2005;64:iv42–3.

[9] Kobelt G, Lindgren P. Geborek P. Costs and outcomes for patients with rheumatoid arthritis treated with biological drugs in Sweden: a model based on registry data. Scand J Rheumatol 2009;38:409–18.

[10] Brennan A, Bansback N, Nixon R, et al. Modelling the cost effectiveness of TNF-α antagonists in the management of rheumatoid arthritis: results from the British Society for Rheumatology Biologics Registry. Rheumatology 2007;46:1345–54.

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Tigecycline option for the treatment of bone and joint infections caused by multidrug-resistant *Staphylococcus epidermidis*

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Bone and joint infections (BJI) are among the most difficult to treat, involving surgical procedures and prolonged antibiotherapy. Staphylococci are the most common microorganisms isolated from such infections. Among them, *Staphylococcus epidermidis* is as frequent as *Staphylococcus aureus*, and represents a particular challenge because of its high resistance level to antibiotics, including reduced susceptibility to glycopeptides. Some cases of BJI, with particular therapeutic difficulties, could require the use of new antibiotics, such as tigecycline. This new antibiotic is recommended in the treatment of skin and soft tissue infections, and is known to be active against multiresistant staphylococci [1].

All cases of BJI due to *S. epidermidis* and treated with tigecycline in patient hospitalized in the orthopaedic septic unit of a