

Translated from ***Rev Prescrire*** **May 2009; 29 (307): 354**

Fewer adverse effects with doxycycline than with minocycline

● **In mid-2008 the French National Pharmacovigilance Committee examined spontaneous reports of adverse effects observed during tetracycline therapy.**

● **When sales figures are taken into account, reports were more frequent with *minocycline* than with *doxycycline*. The proportion of severe adverse effects was also higher with *minocycline* than with *doxycycline*.**

● **Life-threatening hypersensitivity reactions and autoimmune adverse effects were more frequent with *minocycline* than with *doxycycline*.**

● **In practice, *minocycline* has a less favourable risk-benefit balance than *doxycycline*, particularly in the treatment of acne.**

Rev Prescrire **2009; 29 (307): 354.**

In May 2008 the French National Pharmacovigilance Committee examined the results of a national pharmacovigilance survey of tetracyclines conducted by a Parisian pharmacovigilance centre (1).

The results showed noteworthy differences between the tetracyclines. These differences should be taken into account, especially when choosing a tetracycline for treatment of severe, inflammatory or superinfected acne (1,2).

More frequent reports of severe disorders with minocycline. In January 2008, 2099 adverse effects had been reported, 51% with *doxycycline*, 44% with *minocycline*; less than 5% of reports involved *lymecycline* and *metacycline* (1).

According to the French Health Products Safety Agency (Afssaps), *doxycycline* is used 1.5 times more frequently than *minocycline*. When these higher sales volumes are taken into account, reports of adverse effects are more frequent with *minocycline* than with *doxycycline*.

The proportion of severe adverse effects was higher with *minocycline* (29.5%) than with *doxycycline* (19.5%).

The adverse effects most frequently reported with *doxycycline* consisted of gastrointestinal disorders (31%, especially oesophageal damage) and cutaneous disorders (32%, especially photosensitivity reactions). The adverse effects most often reported with *minocycline* were cutaneous disorders (42%; twice as many severe cases as with *doxycycline*: 27.6% versus 13.4%) and neurological disorders (12.5%, including intracranial hypertension in one-third of cases).

Hepatobiliary and respiratory disorders were also more frequent with *minocycline* than with *doxycycline* (7% versus 3% and 8% versus 2%); these disorders were more frequently severe with *minocycline* than with *doxycycline*.

Hypersensitivity and autoimmune reactions: more frequent with minocycline. Involvement of at least two organs, suggestive of a hypersensitivity reaction, was reported in 41 cases with *minocycline* (4.5% of reports) and 5 cases with *doxycycline* (0.5% of reports). 95% of these cases were serious (fatal in 5% of cases). Other hypersensitivity disorders were also more frequent (4% versus 1.6%) and more frequently severe (79% versus 33%) with *minocycline* than with *doxycycline* (1).

Autoimmunity was more frequent and more severe with *minocycline* than with *doxycycline*. Lupus-like reactions accounted for 3% of reports.

According to the report by the National Pharmacovigilance Committee, there are 3 times more detailed publications of adverse effects with *minocycline* than with *doxycycline*. The main adverse effects of *doxycycline* mentioned in these publications are photosensitivity, oesophageal damage and intracranial hypertension. The main adverse effects reported with *minocycline* were pigmentation of the skin and other organs, intracranial hypertension, autoimmune disorders, and especially hypersensitivity reactions.

In practice: choose doxycycline. *Minocycline* is less safe than *doxycycline*. In addition, *minocycline* is no more effective than other tetracyclines in the treatment of acne (3,4). Its risk-benefit balance is therefore less favourable than that of *doxycycline*. *Doxycycline* is a better choice than *minocycline*, particularly in the treatment of acne, while *Martindale*, the clinical pharmacology textbook, lists *lymecycline* as an alternative (3,4).

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Selected references from Prescrire's literature search.

1- Agence française de sécurité sanitaire des produits de santé "Commission nationale de pharmacovigilance. Compte rendu de la réunion du 20 mai 2008 - Enquête officielle relative aux effets indésirables des cyclines" 1 July 2008. Afssaps.sante.fr accessed 17 October 2008: 4 pages.

2- Prescrire Rédaction "Idées-Forces Prescrire - Traitement médicamenteux de l'acné vulgaire" *Rev Prescrire* April 2008. www.prescrire.org: 9 pages.

3- "Oral antibacterials for acne". In: "British National Formulary" The Pharmaceutical Press, London. www.medicinescomplete.com accessed 20 January 2009: 1 page.

4- "Acne". In: "Martindale The Complete Drug Reference" The Pharmaceutical Press, London. www.medicinescomplete.com accessed 21 February 2009: 3 pages.

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