

## 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.

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