

Summary Safety Review - Ceftriaxone-containing products - Assessing the Potential Risk of Encephalopathy

Product: Ceftriaxone-containing products

Potential Safety Issue: Encephalopathy, a disease of the brain that alters its function

Key Messages

- **Ceftriaxone is a prescription antibiotic drug authorized for sale in Canada to treat a wide range of bacterial infections in many different parts of the body or to prevent infections during surgery.**
- **Health Canada reviewed the potential risk of encephalopathy, a disease that affects the brain leading to changes in the way the brain works. This review was triggered by a study published in the Journal of the Neurological Sciences.**
- **Health Canada's review of the available information concluded that there is a possible link between the use of ceftriaxone and the risk of encephalopathy.**
- **Health Canada will work with the manufacturers of ceftriaxone-containing products to update the Canadian product safety information to include the risk of encephalopathy.**

Overview

Health Canada reviewed the potential risk of encephalopathy in patients treated with ceftriaxone-containing products. The safety review was triggered by a publication in the Journal of the Neurological Sciences reporting brain related adverse drug reactions with the use of ceftriaxone¹.

Use in Canada

- Ceftriaxone is a prescription antibiotic drug authorized for sale in Canada since 1987 to treat a wide range of bacterial infections such as urinary tract infections, lower respiratory tract infections, bronchitis, meningitis, and gonorrhea, or to prevent infections during surgery. This antibiotic is mainly used in the hospital setting and is given to patients by a healthcare professional as an injection into a vein or muscle.
- Ceftriaxone is available in Canada as sterile powder for injectable solution, in amounts ranging from 0.25 to 10 grams per vial.
- Two to 3 million vials of ceftriaxone were sold per year in Canada from 2015 to 2019.

Safety Review Findings

- Health Canada reviewed the available information from searches of the Canada Vigilance database^a, international databases and scientific and medical literature.
- Health Canada reviewed 29 cases (5 Canadian and 24 international) of encephalopathy reported with the use of ceftriaxone. The 24 international cases included 18 reported to the Canada Vigilance database and 6 that were only available through the scientific and medical literature. Of the 29 cases, 17 (including 2 Canadian) were found to be possibly linked to the use of ceftriaxone, 8 cases (including 3 Canadian) were not likely to be linked, and 4 cases did not have enough information to be assessed. None reported drug-related death.

- Assessing the risk of encephalopathy related to the use of ceftriaxone-containing products in these reports was challenging due to incomplete case details and other contributing factors, including existing medical conditions and other medications taken by the patients.
- Health Canada also assessed 5 studies and 3 review articles from the published scientific literature. The review of these publications supported a link between the risk of encephalopathy and the use of ceftriaxone.

Conclusions and Actions

- Health Canada’s review of the available information concluded that there may be a link between the use of ceftriaxone-containing products and the risk of encephalopathy.
- Health Canada will work with the manufacturers of ceftriaxone-containing products to update the Canadian product safety information to include the risk of encephalopathy.
- Health Canada encourages consumers and healthcare professionals to [report](#) any side effects related to the use of ceftriaxone-containing products and other health products to the Canada Vigilance Program.
- Health Canada will continue to monitor safety information involving ceftriaxone-containing products, as it does for all health products on the Canadian market, to identify and assess potential harms. Health Canada will take appropriate and timely action should new health risks be identified.

Additional Information

The analysis that contributed to this safety review included scientific and medical literature, Canadian and international information, and what is known about the use of ceftriaxone-containing products both in Canada and internationally.

For additional information, [contact the Marketed Health Products Directorate](#).

References

1. Lacroix C et al. [Serious central nervous system side effects of cephalosporins: a national analysis of serious reports registered in the French pharmacovigilance database](#). J Neurol Sci. Mar 15, 2019. 398: 196-20

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- a. Canadian reports can be accessed through the [Canada Vigilance Online Database](#).