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抗菌薬副作用情報の自己組織化マップ（SOM）を用いたビジュアル化と解析

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A visualization and analysis with the Self-Organizing Map (SOM) for the information of the adverse reaction for antimicrobial agents

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Abstract

Objective: Since the present drug information source such as package insert or interview form is usually given in text-based form, it is not easy to grasp overall or characteristic information about medicine from it quickly. Therefore we tried to visualize and to analyze those informations by making use of self-organizing map (SOM), with learning ability of neural networks, on drug adverse reactions.

Methods: We intended for 44 oral agents taken away to antimicrobial agent handbook 2005 (published by Daiichi Seiyaku) and collected the information on drug adverse reactions from "serious side effects" and "other side effects" part of package insert. With these data, we made SOM using the competitive learning algorithm by Kohonen.

Results: Calculated SOM showed that 44 antimicrobial agents were clustered according to every descent such as quinolone, cefem, penicillin, and so on. At a glance of an element plane of SOM for each side effect made it easy to confirm whether the adverse reaction was already reported or not, and also that is unexpected on the basis of drug descent or action mechanism. It was suggested that side effects suspected to occur in future may be predicted to some extent.

Conclusins: If such visualized information become avilable, for example, it would be easy to look for quickly the substitute medicine candidate which has the same effect but not specific adverse drug reaction when the patient must avoid it. Then it is expected to help speeding up the evaluation of medical on-site drug information or preventing the error by oversight.

Key words: antimicrobial agents, adverse reaction, self-organizing map, visualization of drug information, package insert