Pain, Paralysis, and Other Dangers of Intrathecal Drugs

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PROBLEM: The Institute for Safe Medication Practices (ISMP) has learned of many instances in which drugs that have not been intended for intrathecal use have been administered by this route.

In one case, a 32-year-old woman received an intrathecal injection of an undiluted dose of rifampin (e.g., Rimactane®, Rifadin®, Aventis). Her physician had ordered 20 mg of vancomycin (Vancocin®, Eli Lilly) intrathecally each evening and rifampin 450 mg intravenously (IV) each morning to treat a staphylococcal infection of the central nervous system. The pharmacy placed both the evening dose of vancomycin and the morning dose of rifampin next to each other in syringes in the refrigerator. A hospital policy allowed only physicians to give intrathecal medications, but a medical student gave the evening dose of vancomycin.

Noticing two syringes in the refrigerator, he removed both of them, believing that, together, they contained a single dose of intrathecal vancomycin. He did not notice the label on the rifampin syringe stating the drug name and a note to dilute the medication in 250 ml of fluid prior to administration. Thus, both drugs were given intrathecally. The patient initially experienced nystagmus, nausea, and vomiting. A few days later, she experienced left hemiparesis and eventually required mechanical ventilation.

In another case, reported in a newspaper article, a former police chief with Burkitt’s lymphoma received intrathecal vincristine (e.g., Oncovin® and others) instead of methotrexate. As a result, he suffered paralysis, agonizing pain, and awareness of his own impending death, which occurred on Christmas day, 10 weeks after a neurologist administered the drug. The vincristine had been intended for IV use.

The potential for this type of tragic mix-up is well known. Warnings appear on the product labels, in drug monographs, and in numerous articles published in professional journals and in the ISMP’s newsletter.

The U.S. Pharmacopeia requires specific cautionary labeling when vincristine is being dispensed. When the following wording appears on a label—Fatal if given intrathecally. For IV use only. Do not remove covering until moment of injection—the label must be applied to all syringes by dispensers. Each syringe must be placed into an overwrap that must also have this labeling. However, some staff members might not be aware of the labeling standard, or they might not know that each drug carton contains the cautionary labels and overwrap. These labels might not be seen if the staff is not specifically looking for them.

Even if vincristine is properly labeled and packaged, clinical personnel may unintentionally create a danger by removing the drug from its overwrap in advance of IV injection. If vincristine is near an intrathecal medication during the drug-administration process, it is easy for the physician, who is focused on performing a lumbar puncture, maintaining sterility, and preventing patient movement, to overlook the syringe label and accidentally pick up the intrathecal medication. A neurologist, who might not be familiar with cancer drugs or protocols, might administer the drug. If both syringes are present, the neurologist may erroneously believe that each medication is to be given intrathecally.

SAFE PRACTICE RECOMMENDATION: The Food and Drug Administration (FDA) and the ISMP have been increasing efforts to alert the health care industry about this labeling problem and to suggest solutions. Taking the following steps should go a long way toward preventing accidental intrathecal administration of IV medications:

1. The list of intrathecal drugs that are administered for any disease is very small. Cytarabine, methotrexate, thiotepa, gentamicin, vancomycin, and hydrocortisone are among those used for cancer patients. A list of drugs that can be administered intrathecally (or epidurally) should be established, and all other injectable drugs should be banned from rooms where lumbar punctures are performed.

2. At least two health care professionals should independently verify and document the accuracy of all intrathecal doses before they are administered. In some cases, a family member could also be called upon to help in the checking process.

3. Intrathecal drugs must be wrapped within a sterile bag, which is then wrapped again in a sterile towel or another bag labeled for intrathecal use. The package should not be unwrapped until immediately before injection.

4. In many hospitals, the practice is to dilute vincristine in plastic minibags of IV fluids for supervised infusion to avoid confusion with intrathecal syringes.¹

5. Whenever possible, the staff should ask families and patients whether they are scheduled to receive IV vincristine and intrathecal medications.

6. The staff should ensure that vincristine is never placed near medications that are to be injected intrathecally.

REFERENCE


The reports described in this column were received through the USP–ISMP Medication Errors Reporting Program (MERP). Errors, close calls, or hazardous conditions may be reported on the ISMP (www.ismp.org) or the USP (www.usp.org) Web site or communicated directly to ISMP by calling 1-800-FAILSAFE or via e-mail at ismpinfo@ismp.org.