Thrombocytopenia Associated with Exposure to Iodine

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Iodine as a cause of thrombocytopenia is not listed in hematology textbooks. A Medline search over the past 10 years reveals no such occurrence. In this report a patient exposed to iodine developed profound thrombocytopenia.

Case Report

A 24-year-old Samoan-Chinese man who was a dairy worker developed bruises and petechiae. When seen 3 days later, other than the hemorrhagic skin findings, no other physical abnormalities were found. A CBC revealed WBC 12,400/cmm, RBC 4.66 million/cmm, hemoglobin 14.3 grams, MCV 89, MCH 30.6, MCHC 34.6. The differential smear showed segs 88, band 1, lymphs 7, monocytes 4%. The platelet count was markedly depressed at 8000/cmm and the reticulocyte count was 1%. ANA, RA factor, and serum protein electrophoresis were all normal. Total serum iodine was 9.8 ug/dL (normal 4.5-10.0).

Bone marrow examination revealed marked megakaryocytic hyperplasia.

For the previous 2 to 3 months he had been spraying dairy cows' udder teats with Teat Dip, a glycerin-iodine solution containing 0.1% iodine, as a prophylactic against mastitis. The patient was advised to discontinue all further use of Teat Dip spray.

Prednisone 80 mg a day P.O. was started and 10 units of platelets were given for nose bleed on day 7. Two days later, the platelet count had risen to 25,000/cmm, but dropped sharply to 11,000/cmm by day 11. Therefore, danazol 600 mg/day was added on day 12 for a greater immuno-suppressive effect because it was apparent that prednisone in the dose given was not effective. Because of the decreasing platelet count and the severity of the thrombocytopenia, splenic radiation also was started on day 12 at a dose of one Gy. Thereafter, 6 biweekly fractions were given for a total of 6 Gy over a 3-week period. Six and a half weeks after onset of the disease the platelet count again was severely reduced to 3000/cmm and the dose of danazol, therefore, was increased to 800 mg/day. Vincristine 2 mg i.v. and gamma globulin 25 grams i.v. also were given.

Prosorba immunoabsorption resin column therapy initiated a month earlier and 6 daily column treatments were given because of the decreasing platelet count and high risk for clinical bleeding, especially in the brain in a young person.

The platelet count had risen rapidly to 70,000/cmm as a result, but then dropped to 40,000/cmm a week later. It finally rose to 436,000/cmm at 2 months post-onset and remained normal.

The platelet count was 415,000/cmm at 7 months. Prednisone was gradually reduced and had been discontinued at 2 months, the danazol was discontinued at the same time.

Throughout his entire illness, the patient was treated as an outpatient. The return of his platelet count to normal took 27 days (platelet count of 160,000/cmm).

Other than the exposure to iodine, no other causes for the thrombocytopenia could be elicited. Which modality of the multiple therapies was the most effective could not be determined, and in all probability, all of the combined therapies contributed to his recovery.

Discussion

Although there is no direct proof that iodine spray used to treat the dairy cows' udders had caused thrombocytopenia, in this case a causal relationship is strongly suspected. To expose this patient to the iodine again in order to attempt to re-induce the thrombocytopenia to prove a direct cause and effect was unwise and highly risky.

Isolated thrombocytopenia caused by iodine or iodides has not been reported in the recent past. Preparations of iodine and iodides include Lugol's solution (iodine), sodium and potassium iodide solutions, expectorants containing sodium or potassium iodide, radioactive iodine (sodium iodide L-I3I); antiseptics, such as Betadine, containing povidone-iodine in the form of ointments, solutions, skin cleansers, surgical scrubs and vaginal suppositories; and x-ray-contrast material also contains iodine. Teat Dip contains free iodine mixed with glycerin.

The adverse effects of iodine and iodides include chronic iodine and iodide intoxication (iodism), usually dose related, such as unpleasant taste (described as brassy), burning in the mouth, sore mouth and throat, hypersalivation, painful sialadenitis, acne, rash, productive cough, diarrhea, coryza, sneezing, upset gastric irritation, weakness, foul breath, fever, depression, and occasionally goiter if large doses are given for long periods. In the treatment of nontoxic nodular goiter, administration of iodine can increase plasma thyroid hormone and cause thyrotoxic symptoms. Adverse effects of the topical and vaginal iodine-containing ointments and solutions include local redness, irritation, swelling, pain and burning.

Individuals occasionally are very sensitive to iodine or to organic preparations containing iodine, especially when given i.v. Acute reactions can occur almost immediately or can occur several hours after administration. Angio-edema of the larynx leading to dyspnea and suffocation can occur; skin hemorrhages, serum sickness manifestations such as fever, arthralgia, lymph-node enlargement, and eosinophilia could occur. Thrombotic thrombocytopenic purpura and fatal periarteritis nodosa have been described[2].

Individuals who are sensitive to iodine or iodide by any route should be cautioned against its use.

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References
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2. *Goodman and Gilman's The Pharmacological Basis of Therapeutics*. 6th Edition. MacMillan Publishing Co., Inc. New York, NY. 1980;1413.