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713-955-5323
History:

A 56-year-old male complaining of chest pain was examined. Earlier, this patient had experienced a heart attack which infarcted certain sections of the myocardium. The patient underwent a coronary artery bypass graft (CABG) to the right artery and the left anterior descending artery.

Since the pain suggested the development of ischemic myocardium, a coronary arteriogram and ECAT PET study were conducted. (An ECAT PET study with an exercise protocol determines focal areas of ischemic but viable tissue, thereby identifying tissue which is potentially salvageable with surgery or with balloon angioplasty to open the blocked artery.)

Courtesy of
Dr. Myrwood C. Besozzi
The University of Tennessee
Medical Center at Knoxville
Study Findings:

CATH

A coronary arteriogram demonstrated 100 percent blockage in the distal portion of the left anterior descending artery.

PET

Two ECAT PET scans were conducted: a "NH₃" perfusion scan and an "FDG" muscle viability scan. The normal "NH₃" perfusion scan and "FDG" uptake indicated the heart muscle was receiving sufficient oxygen.

Treatment:

Since the PET scan demonstrated that the heart was receiving sufficient oxygen, bypass surgery was not indicated. Instead, this patient was placed on an appropriate program of medical care.

"NH₃" and "FDG" have not received FDA approval.

Note: Of necessity, original images always lose a certain amount of detail when reproduced.
Coming Attractions...

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October 2 - 8

Starring: Your Department
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The CAPINTEC CRC-35: a powerful radioisotope dose calibrator which utilizes the latest technology to provide for the individual needs required by generator and unit dose users. With automated inventory control, dose to deliver, daily recordkeeping, radiochemical purity analysis with reports printed on the high speed printer provided. And these are just a few of its many features.

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• “Quantitative Cholescintigraphy,” Gerball Krishnamurthy, VA Medical Center, Tuscon, AZ.
• “Comprehensive Gastric Motility Evaluation,” Alan Maurer, Temple University, Philadelphia, PA.
• “Thallium and Sestamibi Breast Scintigraphy,” Alan Waxman, Cedars-Sinai Medical Center, Los Angeles, CA.
• “Detection of Cerebrovascular Disease with Diamox/HMPAO Scintigraphy,” Jack Juni, William Beaumont Hospital, Royal Oak, MI.
• “Double-Phase Tc-99m Sestamibi Parathyroid Scintigraphy,” Raymond Taillefer, Hotel Dieu Hospital, Montreal, Quebec, Canada.
• “Combined Functional and Perfusion Myocardial Perfusion Imaging,” Mark Wittry, St. Louis University Hospital, St. Louis, MO.

Supported by an educational grant from Syncor International

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Payment required in U.S. funds drawn on a U.S. bank. For payments made in U.S. dollars, but drawn on a Canadian bank, add a bank processing fee of $4.50; all other foreign bank drafts, add $40.00. Make check payable to National Audio Video, Inc.

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A diagnostic tool that can assist decision making in patients with colorectal or recurrent ovarian adenocarcinoma.
To enhance decision making in the management of patients with

The first monoclonal antibody-based in determining both the location and

Reveals malignancy with tumor-targeted accuracy—specifically targets the cell-surface antigen, TAG-72, common to colorectal and ovarian adenocarcinomas,\(^1,2\) making it possible—with the use of existing nuclear medicine equipment—to detect extrahepatic abdominal and pelvic lesions.\(^3,4\)

Provides information beyond the scope of standard diagnostic modalities—when interpreted in conjunction with a review of information obtained from other appropriate tests

Found to be beneficial in these difficult situations:

- determining the source of a rising serum tumor marker in patients with an otherwise-negative workup\(^2,4,5\)
- determining extrahepatic abdominal and pelvic involvement in patients thought to have isolated and resectable recurrence\(^2,4\)
- differentiating disease from postsurgical or postradiation anatomic changes\(^6\)

OncoScint is a registered trademark of CYTOGEN Corporation.

Please see last page for brief summary of prescribing information.
Improves patient management and treatment of colorectal or recurrent ovarian cancer...

Imaging agent effective in extent of disease

Assists decision making in patient management\(^2\)\(^-\)\(^5\) —

enhanced medical/surgical management in difficult colorectal\(^3\)\(^,\)\(^4\) and recurrent ovarian cases.\(^2\)\(^,\)\(^5\)

Excellent safety profile* —

with generally minor and transient side effects occurring in less than 4% of patients studied (most frequently reported: fever, chills and clinically insignificant changes in blood pressure).\(^2\)

*See Adverse Reactions section of brief summary on following page.

For further information, please call 1-800-833-3533.

**ONCOSCINT**® **CR/OV**

Satumomab Pendetide (1mg/2mL)

Tumor-targeted cancer detection
OncoScint® CR/OV Kit (satumomab pendetide)

Kit for the Preparation of indium 111 satumomab pendetide
For Intravenous Use Only

Brief summary of prescribing information

INDICATIONS AND USAGE
OncoScint® CR/OV-In (indium 111 satumomab pendetide) is a diagnostic imaging agent that is indicated for determining the extent and location of extralymphatic malignant disease containing known colorectal or ovarian cancer. Clinical studies suggest that this imaging agent should be used after completion of standard diagnostic tests when additional information regarding disease extent could aid in patient management. The diagnostic images acquired with OncoScint® CR/OV-In should be interpreted in conjunction with a review of information obtained from other appropriate tests.

OncoScint® CR/OV-In is not indicated as a screening test for ovarian or colorectal cancer.

Administration of OncoScint® CR/OV-In may result in falsely elevated values from in vitro immunoassays, including tests for carcinoembryonic antigen (CEA) and CA 125. Because this interference may persist for months, the clinical laboratory should investigate for assay interference in patients who develop elevated CEA or CA 125 subsequent to imaging with OncoScint® CR/OV-In (see Drug/Laboratory Test Interactions). Due to insufficient safety and efficacy data regarding repeat administration of this product, this imaging agent is limited to single use only.

CONTRAINDICATIONS
OncoScint® CR/OV-In (indium 111 satumomab pendetide) should not be used in patients who are hypersensitive to this or any other product of murine origin or to indium in 111 chloride.

WARNINGS
Allergic reactions, including anaphylaxis, can occur in patients who receive murine antibodies. Although allergic reactions of this type have not been observed in clinical trials after OncoScint® CR/OV-In (indium 111 satumomab pendetide) administration, medications for the treatment of hypersensitivity reactions should be available during administration of this agent.

PREGNANCY
General
The components of the kit are sterile and pyrogen free and contain no preservative. OncoScint® CR/OV-In (indium 111 satumomab pendetide) should be used within 8 hours after radio-labeling. It is essential to follow the directions for preparation carefully and to adhere to strict aseptic procedures during preparation of the radiolabeled product.

Each OncoScint® CR/OV kit is a unit of use package. The contents of the kit are to be used only to prepare OncoScint® CR/OV-In unlabeled OncoScint® CR/OV should NOT be administered directly to the patient. After radio-labeling with indium-111, the entire OncoScint® CR/OV-in dose must be administered to the patient for whom it was prescribed. Reducing the dose of either component may adversely impact imaging results, and, therefore, is not recommended.

The contents of the kit are not radioactive. However, after the indium in 111 chloride is added to the kit, the contents of OncoScint® CR/OV-In must be considered radioactive and should be handled as radioactive waste. Each KIT which has been used or which of which occurred in less than 1% of patients, are listed in order of decreasing frequency: chills, hypotension, hypertensive shock, pruritis, sweating, nausea, arthralgia, asthma, chest pain, headache, hypothermia, pain, flushing, diarrhea, confusion, dizziness, nervousness, crying, and angioedema. Although causality was not determined, an isolated occurrence of reversible thrombocytopenia was observed in a patient who received OncoScint® CR/OV-In in clinical trials.

ADVERSE REACTIONS
After administration of over 500 single iv. administrations of OncoScint® CR/OV-In (indium 111 satumomab pendetide) in clinical trials, adverse reactions were observed in less than 4% of patients. Adverse reactions did not interfere with OncoScint® CR/OV-In administration were reported. The most common adverse reaction was fever, which occurred in less than 2% of patients. Other adverse reactions, each of which occurred in less than 1% of patients, are listed in order of decreasing frequency: chills, hypotension, hypertensive shock, pruritis, sweating, nausea, arthralgia, asthma, chest pain, headache, hypothermia, pain, flushing, diarrhea, confusion, dizziness, nervousness, crying, and angioedema.

OVERDOSAGE
The maximum amount of OncoScint® CR/OV-In (indium 111 satumomab pendetide) that can safely administered has not been determined. In clinical trials, single doses of 20 mg of OncoScint® CR/OV-In were administered to 64 patients with various types of epithelial carcinomas; the type and frequency of adverse reactions at this dose were similar to those observed with lower doses.

DOSAGE AND ADMINISTRATION
The dose of OncoScint® CR/OV (satumomab pendetide) is 1 mg radiolabeled with 5 mCi of indium in 111 chloride. Each dose is administered intravenously over 5 minutes and should be mixed with any other medication during its administration. The patient dose of the radio-label should be measured in a dose calibrator prior to administration. Each OncoScint® CR/OV kit is a unit dose package. After radio-labeling with indium-111, the entire OncoScint® CR/OV-in dose should be administered to the patient. Reducing the dose of either component may adversely impact imaging results, and, therefore, is not recommended.

HOW SUPPLIED
The OncoScint® CR/OV kit (NDC No. 0044-0579-01) for the preparation of indium-111 labeled OncoScint® CR/OV includes one vial containing 1 mg of satumomab pendetide per 2 mL of sodium phosphate buffered saline and one 2 mL vial of sodium acetate buffer solution, 0.5 M. These solutions are sterile and pyrogen free and contain no preservatives. Each kit also includes one sterile 0.22 μm filter, containing information, and two identification labels.

U.S. Patent Nos. 6,471,958 and 4,741,900 © 1993 CYTogen Corporation
Revised 12/30/92

References
Computers have become an indispensable tool in nuclear medicine. This is the book for those who wish to acquire a basic understanding of how computers work and the processing techniques used to obtain diagnostic information from radionuclide images. The text gives a thorough description of the hardware components of a nuclear medicine computer system and explains the principles behind many common image processing techniques. The following topics are discussed in detail:

- Functions and components of a computer system
- Mass storage devices
- Input and output devices
- Computer software
- Nuclear Medicine image acquisition methods
- Methods of qualitative image analysis
- Quantitative image analysis
- Nuclear cardiology
- Quantitative data analysis
- Single-photon emission computed tomography
- Selecting a computer for nuclear medicine

The book is illustrated throughout to help the reader conceptualize the topics as they are discussed.

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**TECHNOLOGIST PROGRAM**

The ever-increasing importance of the role of the nuclear medicine technologist will be explored in our Technologist Program, and over 70 hours of clinical updates will provide chief and staff technologists with the latest in basic, intermediate, and advanced studies. This program will broaden expertise and enhance the technologist's contribution to nuclear medicine.

**AUDIOVISUALS, BOOKS, JOURNALS**

The Society of Nuclear Medicine is continuously adding to its library of audiovisuals, books, and other publications. A stop at the publications booth is well worth the time. Here you will find on display what the Society has to offer for year-round educational advancement. Networking opportunities and job referral boards are available at special locations throughout the meeting as well as membership information at our membership booth.

**EXPOSITION**

All the major manufacturers of nuclear medicine products and services more than 100 in all will be on hand to explain and demonstrate the most technologically-advanced equipment. Several companies will present User Meetings to give an in-depth understanding of their products.

**REGISTRATION**

<table>
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If you need further information, please contact:

**The Society of Nuclear Medicine**

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When pain is a moving target
Simultaneously targets all sites of metastatic bone pain.

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- Palliation of pain demonstrated in the majority of patients.\(^1\)
- One dose of Metastron provides pain relief for an average of up to 6 months.\(^1\)
- As an adjunct to radiotherapy, 63.6% of patients receiving Metastron (10.8 mCi) had reduced pain at 6 months as compared to 35.0% of patients receiving placebo (n=42).\(^3\)
- Preferentially incorporates into multiple sites of metastatic bone — the dose absorbed in metastatic deposits is approximately ten times that absorbed in normal bone marrow.\(^4,5\)
ADJOINTIVELY DELAYS THE MEDIAN TIME TO PROGRESSION OF PAIN BY 28.1 WEEKS OVER RADIOTHERAPY ALONE.

Median time to requirement for additional radiotherapy at new pain site.¹

**FROM A MULTICENTER, DOUBLE-BLIND STUDY OF 126 PATIENTS WHO RECEIVED A SINGLE INJECTION OF EITHER METASTRON 400 MBq, 10.8 mCi OR PLACEBO WITH FRACTIONATED DOSES OF LOCAL FIELD RADIOTHERAPY (20-30 GY).**

**HIGHLY EFFECTIVE NON-NARCOTIC THERAPY.**

- Metastron may reduce or eliminate the need for dose escalation of narcotic analgesics.¹³

- Onset of pain relief is generally within 7 to 20 days — Metastron is therefore not recommended in patients with very short life expectancy.

**GENERALLY WELL TOLERATED.**

- A depression of white blood cell (20%) and platelet (30%) levels may occur in patients treated with Metastron — clinically significant toxicity is rare.

- Metastron should be used with caution in patients with significantly compromised bone marrow from previous treatment. Caution should also be used in patients with platelet counts below 60,000 or white blood cell counts below 2,400.

- Some patients have reported a transient increase in bone pain lasting 36 to 72 hours following an injection — this can usually be controlled with analgesics.

**AN IMPROVED QUALITY OF LIFE FOR PATIENTS.**

- Metastron may improve patient quality of life, as measured by assessments of mood, mobility, appetite, sleep pattern, and analgesic consumption.¹⁴

Please see following page for full prescribing information.

---

**METASTRON**

(Strontium-89 Chloride Injection)

An effective way to manage metastatic bone pain.
Metastron* (Strontium-89 Chloride Injection)

**Description:** Metastron is a sterile, non-pyrogenic, aqueous solution of Strontium-89 Chloride for intravenous administration. The solution contains no preservative.

Each mL contains: 10.9 - 22.6 mg Metastron Chloride Water for Injection q.s. to 1 mL

The radioactive concentration is 37 MBq/mL, 1 mL/mL, and the specific activity a 2.96 - 6.17 MBq/Mg, 80-167 MBq/Mg at calibration. The pH of the solution is 4.7 - 7.5.

**Physical Characteristics:** Strontium-89 decays by beta emission with a physical half-life of 53.3 days. The maximum beta energy is 1.434 MeV, and the maximum range of beta particles is 6.8 mm. Radiometric decay factors to be applied to the stated value for radioactive concentration at calibration, when calculating injection volumes at the time of administration, are given in Table 1.

### Table 1: Decay of Strontium-89

<table>
<thead>
<tr>
<th>Day(s)</th>
<th>Decay Factor</th>
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<tr>
<td>0</td>
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*Days before (+) or after (-) the calibration date stated on the vial.

**Clinical Pharmacology:** Following intravenous injection, soluble strontium compounds behave like their calcium analogs, clearing rapidly from the blood and selectively localizing in bone mineral. Uptake of strontium by bone occurs preferentially in sites of active bone turnover, thus primary bone tumors and areas of metastases (neoplastic lesions) can accumulate significantly greater concentrations of strontium than surrounding normal bone.

Strontium-89 is eliminated from normal bone tissue more slowly than from bone metastases, and turnover is about 14 days. In patients with extensive skeletal metastases, well over half of the injected dose is retained in the bones.

Excretion pathways are two-thirds urinary and one-third fecal in patients with bone metastases. Urinary excretion is higher in patients without bone lesions. Urinary excretion is greatest in the first two days and is approximately 6 mm. Radiometric decay factors to be applied to the stated value for radioactive concentration at calibration, when calculating injection volumes at the time of administration, are given in Table 1.

Strontium-89 is a pure beta emitter and Strontium-89 Chloride selectively inactivates sites of primary and metastatic bone involvement and retains a small percentage of the dose, exceeding the bone lesions. (The maximum range in tissue is 8 mm; maximum energy is 1.434 MeV). Mean absorbed radiation doses are listed under the Radiation Dosimetry section.

**Clinical Trials:** Clinical trials have examined pain in cancer patients who have received therapy for bone metastases (therefore radiation to involved areas but in whom persistent pain was not observed). In a multi-center Canadian placebo-controlled trial of 165 patients, pain relief occurred in more patients treated with a single injection of Metastron than in patients treated with an injection of placebo. Results are shown in the following tables.

**Adverse Reactions:** A single case of fatal nephrocalcinosis was reported during clinical trials. Most severe reactions of toxicology cannot be predicted by conventional means.

A small number of patients have reported a transient increase in bone pain at 36 to 72 hours after injection. This is usually mild and self-limiting, and controllable with analgesics. A single patient reported chills and fever 12 hours after injection without long-term sequelae.

**Dosage and Administration:** The recommended dosage of Metastron is 145 MBq, 4 mCi, administered by slow intravenous injection (1-2 minutes). Alternatively, a dose of 1.5 - 2.2 MBq (40-60 µCi) body weight may be used.

Increased administrations of Metastron should be based on an individual patient’s response to therapy, current symptoms, and hematologic status, and are generally not recommended at intervals of less than 90 days.

**Precautions:** Metastron-89 Chloride should be restricted to patients with well documented metastatic bone disease. Adequate studies with Strontium-89 Chloride have not been performed to evaluate mutagenic potential or effects on fertility.

**References:**


**Amersham Healthcare**

2013 S. Clearbrook Drive

Arlington Heights, IL 60005

**Product Code:** SNM-2P4

**Manufactured by:**

Amersham International plc

Amerham, England

2013 S. Clearbrook Drive

Arlington Heights, IL 60005

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**References:**


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**Computers in Nuclear Medicine: A Practical Approach**  
Kai Lee  
$30 members/$45 nonmembers. This illustrated guide explains both how computers work and how processing techniques obtain diagnostic information from radionuclide images.

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Store at 15-25°C before and after reconstitution.

RADIATION DOSIMETRY: The radiation doses to organs and tissues of an average patient (70kg) per 110MBq (30mCi) of Technetium Tc99m Sestamibi injected intravenously are shown in Table 4.

Table 4. Radiation Absorbed Doses from Tc99m Sestamibi

<table>
<thead>
<tr>
<th>Organ</th>
<th>2.0 hour void</th>
<th>4.8 hour void</th>
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<tbody>
<tr>
<td></td>
<td>rad/ mGy</td>
<td>rad/ mGy</td>
</tr>
<tr>
<td></td>
<td>30mCi</td>
<td>1110MBq</td>
</tr>
<tr>
<td>Breasts</td>
<td>0.2</td>
<td>0.2</td>
</tr>
<tr>
<td>Gallibadder Wall</td>
<td>2.0</td>
<td>20.0</td>
</tr>
<tr>
<td>Sestamibi</td>
<td>3.0</td>
<td>30.0</td>
</tr>
<tr>
<td>Upper Large Intestine</td>
<td>5.4</td>
<td>55.5</td>
</tr>
<tr>
<td>Lower Large Intestine</td>
<td>3.9</td>
<td>40.0</td>
</tr>
<tr>
<td>Stomach</td>
<td>0.6</td>
<td>6.1</td>
</tr>
<tr>
<td>Heart Wall</td>
<td>0.5</td>
<td>5.1</td>
</tr>
<tr>
<td>Kidneys</td>
<td>2.0</td>
<td>20.0</td>
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<tr>
<td>Lungs</td>
<td>0.6</td>
<td>5.8</td>
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<td>Testes</td>
<td>0.3</td>
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<td>Red Marrow</td>
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<td>Urinary Bladder Wall</td>
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<td>20.0</td>
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<tr>
<td>Total Body</td>
<td>0.5</td>
<td>4.8</td>
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Dosimetry internal dose information center, July 1990, Oak ridge associated universities, P.O. Box 117, Oak ridge. TN 37830, 659-3744-864.

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