

# Complications of Lymphangiography in Patients of Advanced Age

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The case records of 81 patients over the age of 60 were reviewed with respect to complications following lymphangiography. Adverse prognostic factors and complications were studied. Of the 81 patients, 48 were 60–69 years old and 33 were 70 or older; 19 patients had mild risk factors and 16 had severe risk factors. There were only six complications secondary to lymphangiography—two moderate and four mild. No severe complications were noted. This study suggests that age in itself is not a contraindication to lymphangiography.

Lymphangiography is a well established technique used in the evaluation of patients with malignant disease and disorders of the lymph system. The major complications of the procedure and their incidence have been reported by Koehler [1]. A fatal complication may be expected in one of every 1,800 lymphangiograms performed. Pulmonary infarction, pulmonary edema, and pneumonia are the serious pulmonary complications, occurring at rates of one in 400, one in 3,200 and one in 2,500 procedures, respectively [1].

Contraindications to lymphangiography are (1) known previous anaphylactic-type allergic reaction to iodinated contrast material or vital blue dye; (2) right-to-left cardiac shunt; and (3) severe pulmonary disease. Patients with tumor involvement of the lung parenchyma or pneumonia or who have had previous radiation therapy to the lungs have a greater risk of pulmonary complication from lymphangiography.

Advanced age has been thought to be a relative contraindication to lymphangiography, presumably because of a greater incidence of chronic lung disease in this population. Previous reports [1–4] have not separated the patients with complications into age groups. Our study evaluates the complication rate of lymphangiography in patients over 60 years of age to determine whether these patients are at higher risk than the general population.

## Materials and Methods

### Technique

Lymphangiography, as performed at the Massachusetts General Hospital and the New England Deaconess Hospital, is based on the technique of Kinmonth [5]. The lymphatics are identified after the subcutaneous injection of 11% patent blue violet dye and cannulated in the standard manner.

Ethiodized oil (Ethiodol) is infused by means of a constant speed automatic injector at a rate of 0.16 ml/min. If this rate of infusion causes leg pain, the rate is slowed to 0.06 ml/min.

The infusion of contrast material is monitored by fluoroscopy or films. The amount of contrast injected is limited to 7 ml in each foot for an adult. Children receive an appropriately reduced amount based on their size and weight. Anteroposterior, lateral, and oblique radiographs of the pelvis and paraaortic areas are obtained during the filling phase and at 24 hr.

### Patient Selection

The charts of all patients over the age of 60 years who underwent lymphangiography at our hospitals from 1971 to 1975 were reviewed with respect to age, physical findings, laboratory data including electrocardiograms, chest films, and pulmonary function studies when available. Medical, cardiac, and pulmonary risk factors were classified as mild or severe. Mild risk factors were those conditions that were subclinical, while clinically symptomatic conditions were classed as severe. The cardiac risk factors include congestive heart failure, arrhythmias, previous myocardial infarction, severe hypertension (greater than 180 over 100), and moderate to severe left ventricular hypertrophy. Nonspecific ST changes on electrocardiograms were not considered significant. Significant pulmonary disease was defined as a force vital capacity of less than 60% of the normal predicted value and/or x-ray, physical, or historic evidence of chronic obstructive lung disease.

Other adverse factors included pulmonary fibrosis with or without associated prior radiotherapy, significant atelectasis, pleural effusion, myasthenia gravis, severe cachexia, generalized weakness, and debilitation and lymphovenous fistula noted on the lymphangiogram. Recent medical insults such as pulmonary emboli, pulmonary infection, and postoperative status were also considered risk factors. Lymphovenous fistula was considered a contraindication and therefore a severe risk factor.

## Results

We reviewed 81 patients between the ages of 60–90 who underwent lymphangiography; average age was 67. Age distribution in relation to risk factors and complications is noted in table 1. There were no complications in nine patients between the ages of 60 and 69 with mild risk factors. Of the seven patients in this age group with severe risk factors, only one had a

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TABLE 1  
Complications and Risk Factors by Age Group

Age Group	No. Patients	No. with Complications		No. with Risk Factors	
		Mild	Moderate	Mild	Severe
60-69 . . . .	48	4	1	9	7
70-79 . . . .	30	0	1	7	7
80-89 . . . .	2	0	0	1	0
90+ . . . . .	1	0	0	0	1
Total . . .	81	4	2	17	15

moderately severe complication, consisting of oil embolization with slight shortness of breath which spontaneously resolved. Two of the seven patients sustained mild complications consisting of asymptomatic oil embolization and lipid pneumonia which also spontaneously resolved. Of the patients in this age group without risk factors, two sustained mild complications related to the procedure: a minor wound infection and urticaria.

In the 70-79 year age group, seven patients had mild risk factors and seven had severe risk factors. Only one patient in the latter category sustained a moderately severe complication. That complication was increased shortness of breath and increased pleural effusion after lymphography, which resolved with standard treatment of congestive heart failure.

In the 80-89 year and 90 year age groups, two of the

three patients had either a mildly adverse or severely adverse risk factor; there were no complications.

### Discussion

Among the 81 patients, there were no serious complications after lymphangiography. There were four mild complications and two moderately severe complications, even though 17 patients had mild risk factors and 15 had severe risk factors. No correlation between age and complication rate was found. Complications did not tend to occur in patients with risk factors. Two nonpulmonary complications occurred in patients without risk factors, and the four pulmonary complications occurred in patients with risk factors. On the basis of these data, it appears that lymphangiography, when indicated, should not be withheld solely on the basis of advanced age.

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