Sonographic Appearances of Lymphangiomas

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Lymphangiomas are congenital -lesions that develop from sequestered lymphatic sacs. They are most commonly seen as cervical masses in children but can also be found in other sites. Since these are primarily fluid filled and are usually superficial in location, they are easily examined with high-resolution ultrasound. Their sonographic appearance has been reported to be variable(l,3). The present report documents sonographic appearances of lymphangiomas.

Results

Our series consists of 12 patients of lymphangioma in different pails of the body. The age of the patients ranged between 12 days to 31 years. There were 9 female and 3 male patients. Ultrasonography was done using 3 MHz linear and 5MHz sector transducers and with waterbath attachments. Six lymphangiomas were located in the neck, two in the submandibular region, one in supraclavicular region, one each in the abdominal wall, chest and coccygeal region *(Table I)*. One of the masses in the neck involved both the sides and other extended into the supraclavicular region. Associated lesions were: macrodactyly of 2nd and 3rd toes of feet in abdominal lymphangioma and cystic lesions in multiple bones in lymphangioma in chest wall. The diagnosis of lymphangioma was confirmed by surgery in 9 patients and FNAC in 3 patients. Nine of the masses were proved to be cystic hygromas and three cavernous lymphangiomas.

On ultrasound, four different types of sonographic features were seen *(a)* cystic with thin septae-5 cases *(Fig. I); (b)* cystic with thick septae-3 cases; (c) cystic with thick septae and solid areas-3 cases *(Fig.* 2); and *(d)* mainly solid with scattered cystic areas-1 case *(Fig. 3)*.

Discussion

Lymphangiomas are believed to be caused by congenital obstruction of lymphatic drainage. Histologically, lymphangiomas have been classified into three types on the basis of the size of the lymphatic channels: *(a) Simple-made* up of capillary-size lymphatic channels; *(b) Cav*ernous-containing larger lymphatic channels; and *(c) Cystic hygromas*-which are multilocular cystic masses. Since separation of these types is difficult pathologically and all three types often coexist in the same lesion, these masses are collectively called lymphangiomas.

About 75% of lymphangiomas occur in the neck, generally \n the posterior triangle,

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TABLE I–*Distribution and Sonographic Appearance of Lymphangiomas*

Case No.	Age (Year)	Sex	Location	Sonographic appearance
1.	3	F	Neck-Lt	Cystic+thin septae
2.	4	M	Neck-Rt	Cystic+thin septae
3.	2½	F	Submand.-Lt	Cystic+thick septae
4.	9 mo	F	Neck-Rt	Cystic+thin septae
5.	12 days	F	Neck-Rt	Cystic+thin septae
6.	3½	F	Neck-Bilateral	Cystic+thick septae+solid areas
7.	2	M	Submand.-Rt	Cystic+thick septae+solid areas
8.	1½	F	Abdomen-Rt+macrodactyly	Mainly solid+scattered cystic areas
9.	1	M	Supraclav.-Lt	Cystic+thick septae+solid areas
10.	10	F	Neck+supraclav.-Rt	Cystic+thin septae
11.	25	F	Chest-Lt+bone lesions	Cystic+thick septae
12.	31	F	Coccygeal region	Cystic+thin septae

Submand = Submandibular; Supraclav = Supraclavicular

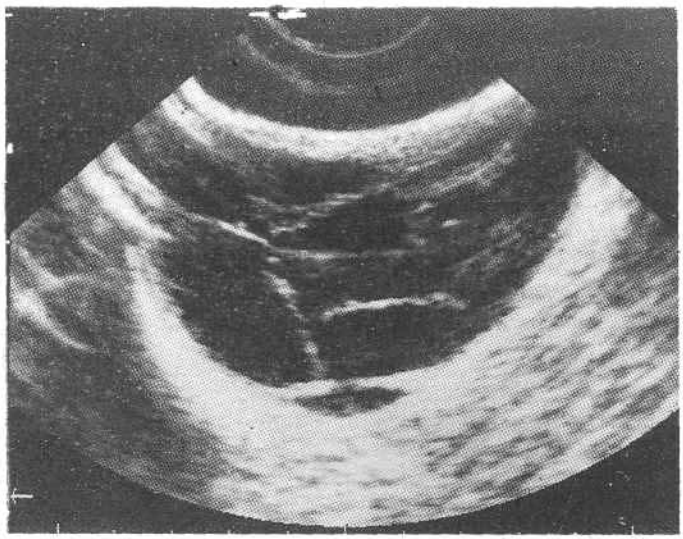

Fig. 1. Sector scan shows multiloculated cystic hygroma with thin septae.

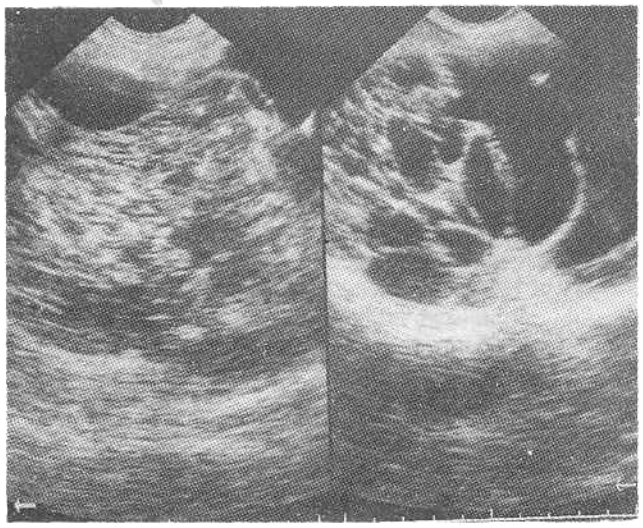

Fig. 2. Sector scan shows lymphangioma with solid area and multiple septae.

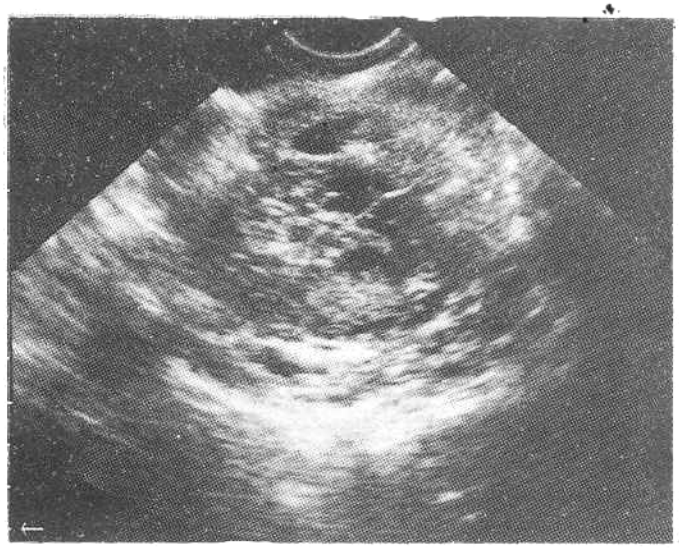

Fig. 3. Scan shows mainly solid cystic hygroma with few cystic areas.

and 20% occur in the axillary region(4). Other locations include the mediastinum, retroperitoneum, bones, scrotum and abdominal viscera. Approximately 3-10% of cervical lymphangiomas extend into the superior mediastinum. About 50% of cystic hygromas are discovered at birth and 90% are evident before the end of the second year. There is no predilection for either sex. In our series, however, there was

female preponderance. They are usually slow growing masses but sudden enlargement can occur owing to internal hemorrhage, inflammation or even respiratory tract infection or trauma(5).

On ultrasound, a cystic hygroma characteristically appears as a multiloculated cystic mass with septae of variable thickness(3). In our series, four varied sonographic appearances of lymphangiomas were encountered: *(a)* cystic with thin septae; *(b)* cystic with thick septae; *(c)* cystic with thick septae and solid areas; and *(d)* mainly solid with scattered cystic areas. Other authors have also demonstrated solid areas in cystic hygromas(l,2). Sheth *et al.(2)* correlated sonographic findings with pathologic specimen and demonstrated that the echogenic component corresponded to a cluster of abnormal lymphatic channels, too small to be resolved with ultrasound. They also reported calcified focus in one of their case, which on histology was proved to be due to calcified thrombus. Cystic hygromas, occasionally, cannot be confidently diagnosed preoperatively when hemorrhage or infection is present rendering the mass sonographically complex(3).

Ultrasound is very helpful in determining the extent of cystic hygromas before surgery and in assessing postoperative complications and recurrences. The differential diagnosis of a predominantly cystic extrathyroidal neck mass included branchial cyst, thyroglossal duct cyst, abscess, resolving hematoma, lymph node, teratoma, Iaryngocele orpharyngocele(6).

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