Detectability and measurement of cisterna chyli with Heavily T2-weighted technique at 3.0 Tesla

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Introduction The origin of the thoracic duct is the cisterna chyli. It is difficult to show due to its small size and the particular position. We found that the cisterna chyli could be shown on the images of the thin-collimation three-dimensional MR cholangiopancreatography (MRCP) and fat-suppressed T2-weighted images at 3.0 Tesla

Objective Our aim is to detect the position, configuration, dimensions of the cisterna chyli on heavily T2-weighted images and to probe the relationship of the dimensions of the cisterna chyli between in disorders and a control group.

Methods Three-dimensional MR cholangiopancreatography in 142 patients were performed (87males, 55 females; range 18-76 yr, mean age, 47.6 yr), and all examinations were performed with a 3.0 Tesla clinical scanner (Signa Excite, GE) using an 8-channel torso phased-array coil. Twenty-nine cases were excluded because of poor imaging quality. The position, configuration, the mean longitudinal, anteroposterior and transverse diameters of the cisterna chyli were reviewed. The parameters above measured in four groups including the control, portal hypertension, choledochus obstruction, and malignant tumour were compared.

Results The cisterna chyli was shown in 79.58% of patients. The most common configuration of the cisterna chili was tubular or saccular in 61.95% of cases, and its location was at the level of L1 in 54.87%, and anterior to the midline of the vertebral body in 74.34%. The mean longitudinal, anteroposterior and transverse diameters of the cisterna chyli were 26.34±10.40mm, 5.20±2.18mm, and 5.25±2.16mm respectively. There was a significant difference of the number of the lymphatic ducts among the control group and the risk groups (F=3.272, P=0.024), but the differences of other parameters were not found in this study (P>0.05).

Conclusion Cisterna chyli may be detected on heavily T2-weighted images at 3.0 Tesla, and the disorders may influence the number of the lymphatic ducts at thoracic duct.

Table1: Difference of the measurements of the cisterna chyli in three groups

Group	n	Cisterna chyli			
		Length (mm)	ransverse (mm)	Anteroposterior (mm)	Number of lymphatic channels (n)
1(control)	48	27.51±9.45	5.02±1.91	5.19±2.49	3.34±0.21
2	17	23.55±9.32	5.49±2.63	5.65±2.58	2.33±0.28
3	19	24.81±11.06	5.24±2.60	5.30±2.04	2.63±0.23
4	29	27.07±12.29	5.25±1.93	4.96±1.75	2.56±0.29
P value(F)	113	0.52 (0.759)	0.901 (0.193)	0.87 (0.238)	0.024 (3.272)

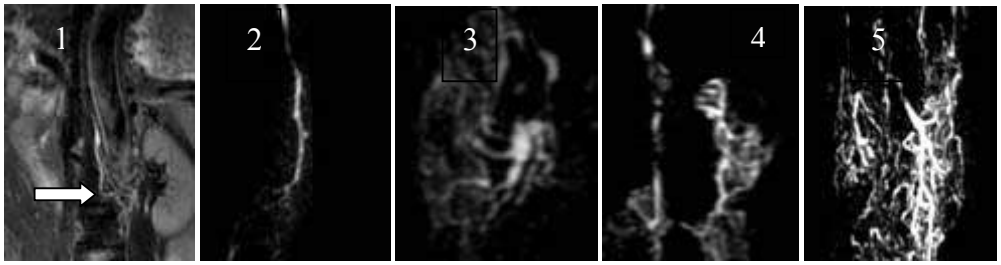

Fig.1. The cisterna chyli (long white arrow) is tubular hyperintense signal on coronal fat-suppressed T2-weighted image，and 2 lympn trunks drain into it. Fig.2-4. The cisterna chyli is tubular, as a star or double-tubular. Fig.5. The cisterna chyli is composed three lymph trunks (white arrow) and some small lymph channels.

Reference

1 Pinto PS, Sirlin CB, Andrade-Barreto OA, et al. Cisterna chyli at routine abdominal MR imaging: a normal anatomic structure in the retrocrural space. Radiographics, 2004, 24(3): 809-817.

2 Erden A. Cisterna chyli: an incidental finding on MR cholangiopancreatography. AJR, 2004, 182(1): 262.

3 Hayashi S, Miyazaki M. Thoracic duct: visualization at nonenhanced MR lymphography--initial experience. Radiology, 1999, 212(2): 598-600.

4 Takahashi H, Kuboyama S, Abe H, et al. Clinical feasibility of noncontrast-enhanced magnetic resonance lymphography of the thoracic duct. Chest, 2003, 124(6): 2136-2142.