Preduodenal Portal Vein: A Cause of Duodenal Obstruction in One Case and Incidental Finding in Another

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Abstract
Preduodenal portal vein is rare congenital anomaly that is usually associated with other gastrointestinal, cardiac, pancreatic and biliary anomalies. There are few case reports in the literature about this anomaly. Two cases of PDPV presented to Assiut university children hospital with manifestation of duodenal obstruction without being diagnosed either antenatally or preoperatively. Although rare; PDPV should always be suspected in all cases of duodenal obstruction.

Keywords: Duodenal obstruction; Preduodenal portal vein

Background
Preduodenal portal vein (PDPV) is rare congenital anomaly that was first described by knight in 1921 [1] and caused by anteriorly placed portal vein as a result of embryonic mal development. During early embryonic life the primitive gut is drained by two parallel vitelline veins. These two parallel veins are connected by three anastomotic branches: cephalic branch (within the liver), middle branch (posterior to the duodenum) and caudal one (anterior to the duodenum). Later on both the caudal and cephalic anastomotic branches with the caudal part of the right vitelline vein and the cephalic part of the left vitelline vein disappear, leaving an S shape portal vein behind the duodenum. If the middle and cephalic branches disappear together with the left vitelline vein PDPV arise [2,3] PDPV usually associated with malrotation, situs inversus viscerum, duodenal atresia, annular pancreas and biliary malformation [4]. There are few case reports in the literature about this anomaly. In this case report two cases of PDPV presented to Assiut university children hospital during the last 8 years of duodenal obstruction without being diagnosed either antenatally or preoperatively.

Case Reports

Case 1
Case 1 was a full term baby, weight 2,340 gm delivered by normal vaginal delivery. On the 2nd day after delivery the baby developed persistent non bilious vomiting. The patient referred to our unit with dehydration and hypochloraeic metabolic alkalosis. After resuscitation and correction of the electrolyte disturbance the preoperative plain and contrast study prove that the patient has situs inversus totalis with markedly dilated stomach and first part of duodenum with delayed passage of the dye further (Figure 2). No other congenital anomalies could be detected. On exploration both the stomach and the first part of duodenum were markedly dilated. The rest of the duodenum was collapsed, kinked, none rotated and compressed by abnormally positioned anterior portal vein which was crossing in front of the first part of the duodenum (Figure 3). Duodenotomy to exclude any intra luminal duodenal pathology was done followed by side to side duodenoduodenostomy in front of the PDPV was amenable after mobilization and straightening of the duodenum. The patient started oral feeding on the 4th post operative day with uneventful post operative course and was discharged on the 8th post operative day. Both cases did not show any post operative bilious vomiting.

Figure 1: Dilatation of the stomach and first part of duodenum; the portal vein abnormally crossing in front of the duodenum.

Figure 2: Abdominal radiograph (plain x-ray erect) done for Case 1 showing dilated stomach and first part of duodenum; the portal vein abnormally crossing in front of the duodenum.

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Such duodenal web, annular pancreas and intestinal malrotation or nonrotation [2]. In this case report malrotation in the first case was the cause of duodenal obstruction while both PDPV and nonrotation in the second case was the cause of duodenal obstruction. Thus it is important to exclude any intrinsic or extrinsic cause of duodenal obstruction before referring the obstruction to the PDPV as a primary cause [6]. The preferred treatment of duodenal obstruction caused by PDPV is to bypass the obstruction either by duodeno-duodenostomy or gastro-duodenostomy [2]. In this case report both cases had duodeno-duodenostomy and their postoperative period was uneventful.

Conclusion

Although rare; PDPV should always be suspected in all cases of duodenal obstruction. However other more common causes of duodenal obstruction should be looked for carefully to avoid nonoptimal procedure. Early intervention is important to avoid progressive deterioration of the patient especially if the patient came with persistent vomiting.

References