Prevalence of Lambl's Excrescences in Pediatric Transthoracic Echocardiograms

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Abstract

Background: Lambl's excrescences (LE) are filiform fibrous strands present on the ventricular surface of the aortic valve which are not known to cause embolic stroke in adults. Their prevalence on transesophageal echocardiograms in healthy adults has been reported to be as high as 38%. Contrary to this, similar findings on the aortic valve in pediatric patients raises suspicion of thrombus, vegetation or papillary fibroelastosis and poses a theoretical risk of embolic stroke. With improvement in the quality of transthoracic echocardiographic (TTE) imaging, LE may be seen more readily in pediatric patients. Misdiagnosis can lead to unnecessary testing and treatment. The prevalence of LE in pediatric TTE studies is not known. We sought to determine the prevalence of LE in normal pediatric studies and the role of improved imaging quality between two eras.

Methods: We reviewed 550 TTE studies retrospectively in subjects ≤ 18 years of age. From these, 200 consecutive studies were from 2011-2012 (modern era), while 350 consecutive studies were from 2004-2006 (old era). Only the studies with normal intra-cardiac anatomy and function were included. All long and short axis images of the aortic valve were reviewed. Indications for these studies were murmur, chest pain, syncope, and screening for inherited diseases. All studies were reviewed by a trained observer. The positive studies were then reviewed by two expert observers to confirm the presence of LE. The prevalence of LE in the two time eras was calculated and compared.

Results: Of 550 subjects (age range: 1 day – 18 yrs., mean: 8.7 ±6 yrs.), 8 (1.5%) were found to have LE. From the old era, 3 (0.9%) subjects had LE; while in the modern era 5 (2.5%) were found to have LE (p= 0.15). The presence of LE was not related to age (p= 0.96). Mean age of subjects with LE was 8.8 yrs. (range 4 months – 16 yrs.). None of these patients underwent further testing.

Conclusions: The prevalence of LE on TTE studies in normal pediatric subjects is 0.9 – 2.5%. Therefore, LE must be included in the differential diagnosis for any echogenic mass on the aortic valve. The difference between the prevalence in the two time eras was not statistically significant. However, the number of subjects with LE is too small to conclude this definitively. Improving quality of imaging with better resolution technology may continue to increase the identification of LE in pediatric patients.

Background

- Finding any mass on the aortic valve in pediatric patients raises the suspicion of thrombus, vegetation or papillary fibroelastosis and poses a theoretical risk of embolic stroke, leading to patient/family anxiety and further testing
- Lambl's excrescences (LE) are filiform fibrous strands seen on the ventricular surface of the aortic valve that are not known to cause embolic stroke in adults
- Prevalence of LE on transesophageal echocardiograms in healthy adults has been as high as 38%
- With improvement in the quality of TTE imaging, LE may be visualized more readily in pediatric patients
- The prevalence of LE in pediatric TTE studies is not known
- **Study Objectives:**
- To determine the prevalence of LE in normal pediatric studies
- To determine the role of improved imaging quality over time to detect LE on TTE in pediatric patients

Methods

- Retrospective review of digital images of TTE
- Subject age ≤ 18 years
  - Normal intracardiac anatomy and function
  - Indications for TTE: murmur, chest pain, syncope, and screening for inherited diseases
- Consecutive studies from two eras were included:
  - 2004-2006 (old era)
  - 2011-2012 (modern era)
- All studies were reviewed by one trained observer
- Positive studies were confirmed by two expert observers for the presence of LE
- The prevalence of LE in the two time eras was calculated
- Comparison of prevalence of LE in the two time eras was performed

Results

- Total subjects: 550
- Age range: 1 day – 18 yrs., mean: 8.7 ±6.0 yrs.
- Total subjects with LE: 8 (1.5%)

	N	Lambl's Excrescences	%
Old era	350	3	0.9
New era	200	5	2.5

- No statistically significant difference between old and new eras (p-value: 0.15)
- Presence of LE was not related to age (p-value: 0.96)
- Mean age of subjects with LE: 8.8 yrs. (range 4 months – 16 yrs.)

Figure 1

Figure 1: Pathological specimen of Lambl's excrescences

Figure 2

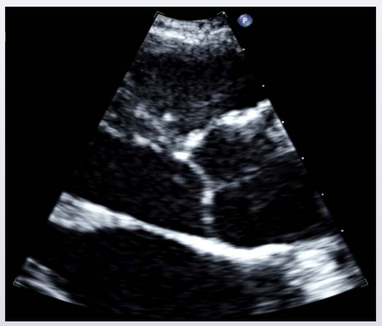

Figure 2: Echocardiographic appearance of Lambl's excrescences

Conclusions

- Prevalence of LE on TTE studies in normal pediatric subjects is 0.9 – 2.5%
- LE must be included in the differential diagnosis for any echogenic mass on the aortic valve
- The difference between the prevalence in the two time eras was not statistically significant. However, the number of subjects with LE is too small to conclude this definitively
- Improved quality of imaging with better resolution may continue to increase the identification of LE in pediatric patients.