

Three of Hearts: A Case Series and Literature Review of Pediatric Purulent Pericarditis

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Introduction

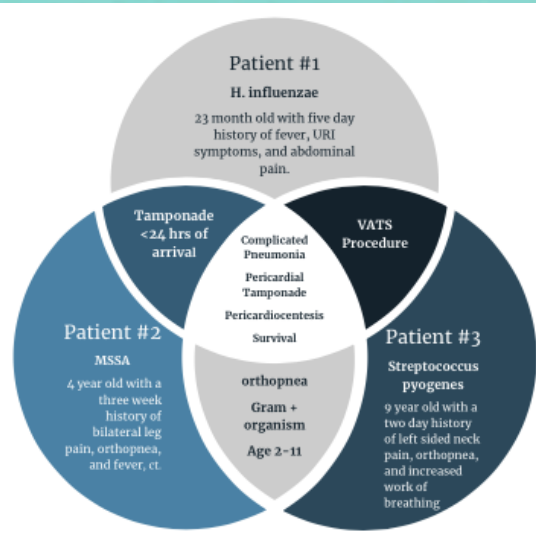
- Purulent pericarditis and development of pericardial tamponade is extremely rare in the pediatric population.
- Since development of vaccinations including the HiB vaccine in 1987, The PCV7 in 2000, and PCV13 in 2010, cases have become seemingly more infrequent.
- The last known literature review of this topic in a pediatric patient was in 1979.
- This study outlines three pediatric cases of purulent pericarditis and development of pericardial tamponade in a free standing Children's Hospital from the year 2018-2019 as well as a literature review of purulent pericarditis in the pediatric population from the year 2000 to today.

Case Series

Three pediatric cases of purulent pericarditis with clinical course complicated by pericardial tamponade all occurring within the year of 2018-2019 at The Children's Hospital of San Antonio



Figure 1: Chest CT from Patient #1 showing severe necrotizing pneumonia immediately following pericardiocentesis



Literature Review 2000-2019

Methodology

- Literature of pediatric purulent pericarditis was reviewed from the published year 2000-2019
- individual case series and larger scale institutional studies were interpreted to create a cohort of 93 patients

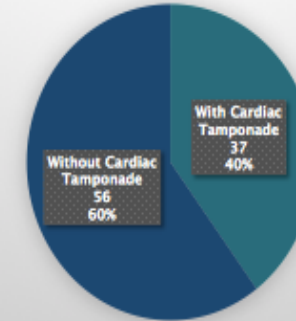
Inclusion criteria:

- Age of ≤ 18
- Diagnosis of purulent pericarditis by either culture positive pericardial fluid or purulent fluid visualized at pericardiocentesis
- Article or study was published in English.
- Several studies that included both adults and pediatric patients were excluded because the appropriate data was unable to be extracted for review.

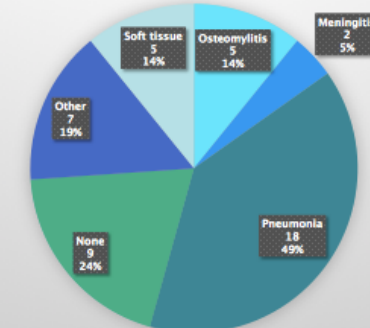
Results

- The cohort included 93 patients, the median age is 4 years old.
- In 68.8% of children the etiology was identified from pericardial fluid.
- The most common organism detected was *S. aureus* (38.7%) and a concurrent infection was seen in 56.9% -pneumonia (36.5%), osteomyelitis (17.2%), soft tissue (7.5%), and meningitis (2.1%).
- In North America MSSA was most common (7/20, 35%) and associated infection was seen in 80% (16/20).
- Pericardial tamponade occurred in 68.5% (37/54) of patients
- 48.6% (18/37) of those children with tamponade also had pneumonia.
- Pericardiocentesis was performed in 77.4% of cases.
- The mortality rate was 4.3%.

Tamponade in Cases of Pediatric Purulent Pericarditis



Concurrent Infections in Patients with Purulent Pericarditis and Tamponade



Male Vs. Female

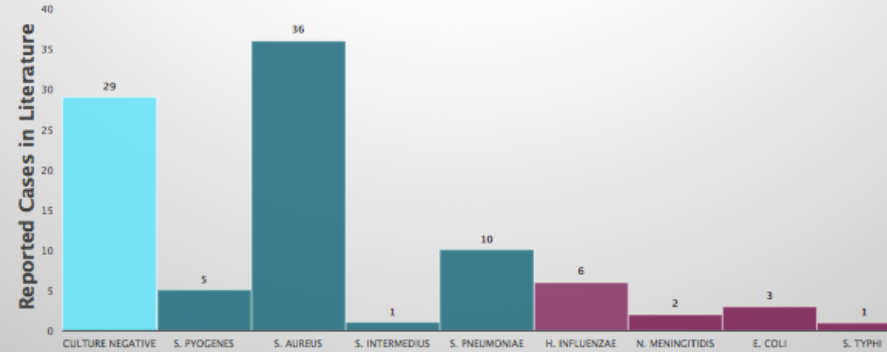
Sex	Individuals	Percent
Male	44	47.3%
Female	49	52.6%

Age Group

Age (years)	Individuals	Percent
<2	28	30.1%
2-11	55	59.1%
>11	10	10.7%

Organism	North America		Outside of North America		Worldwide	
	#	%	#	%	#	%
Culture Negative	1	5%	28	38%	29	31%
H. influenzae	3	15%	3	4%	6	6%
GAS	2	10%	3	4%	5	5%
S. aureus	12	60%	24	33%	36	39%
S. intermedius	1	5%	0	0%	1	1%
S. pneumoniae	0	0%	10	14%	10	11%
N. meningitidis	1	5%	1	1%	2	2%
E. Coli	0	0%	3	4%	3	3%
S. typhi	0	0%	1	1%	1	1%
Total	20	100%	73	100%	93	100%

Causative Organisms of Pediatric Purulent Pericarditis Worldwide



Conclusion

- Gram-positive organisms account for 81.2% of children with positive pericardial fluid culture, and 75% of infections in North America.
- A bacterial pathogen can be isolated from the pericardial fluid in a majority of patients
- There is a high rate of concurrent infection, most notably pneumonia, and there is a strikingly high percentage of tamponade in those cases.
- Children are at greatest risk in early childhood
- Goals for future research include further investigation into why children with necrotizing pneumonia are susceptible to developing purulent pericarditis and factors that predict development of tamponade.