



NUTRITIONAL MANAGEMENT OF CHYLOTHORAX

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INTRODUCTION



- Nutrition therapy plays a major role in the conservative treatment of chyle leaks.
- Loss of this protein-rich, calorie-rich fluid can cause complications including dehydration, malnutrition and immuno suppression.



CASE SCENARIO



9 month male child who is a K/C/O CHD – large VSD + PDA
H/o birth asphyxia, brief neonatal ventilation & persistent
stridor

Clinical history

Cyanosis : Nil

Clubbing : Nil

Icterus : Nil

Temperature : 102°F

Pulse : 106/min

BP: 98/48mm Hg

CVS: S1, S2 Present , systolic murmur present

Surgery : VSD + PDA Division





Anthropometry

Admission weight : 7.2 Kg

Admission height : 72.2cm

Head circumference : 40 cm

% Weight for height : 78 %

Wasting (Mild)

% Height for age : 99%

BMI for age percentile : <3rd percentile

Diet history : DBM + Weaning diet

Nutrition related diagnosis- Acute Malnutrition





NUTRITIONAL REQUIREMENT

Estimated by catch up Growth formula

Calorie needs – $\frac{\text{DRI for energy} \times \text{Ideal wt for ht (kg)}}{\text{Actual wt (kg)}}$

Protein needs – $\frac{\text{DRI Protein for age} \times \text{Ideal wt for ht (kg)}}{\text{Actual wt (kg)}}$

DRI – Dietary Reference Intake

Required Calories : 736 k.cal

Required Protein : 15 gm

Ref:- Manual of Pediatric Nutrition by Hendricks & Duggan

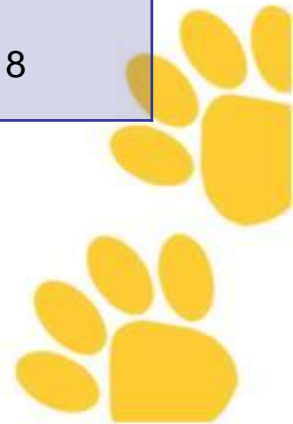




POST OPERATIVE DIET



POD	FEEDING ROUTE	DIET PRESCRIBED	CALORIES (Kcals)	PROTEIN (gm)	FAT (gm)
Day 1	NBM				
Day 2 - 3	Central line	TPN @ 12ml/hr	581	7	7
Day 4 -5	Central line	TPN @ 15ml/hr	758	14	10
Day 6	PN + NG	TPN @ 10 ml/hr	494	7	7
		RTF@15ml/hr	266	8	11
	Total		760	15	18





POST OPERATIVE DIET



POD	FEEDING ROUTE	DIET PRESCRIBED	CALORIES (Kcals)	PROTEIN (gm)	FAT (gm)
Day 7	NG	RTF@ 24ml/hr	425	14	18
Day 8	Chyle leak was detected. Pleural fluid TGL – 363 mg/dl				





Medical Nutrition Therapy

Focuses on restriction of dietary long-chain triglycerides while correcting other nutrient deficiencies

Goals

- Decrease production of chyle fluid
- Replace fluid and electrolytes
- Maintain or replete nutritional status and prevent malnutrition

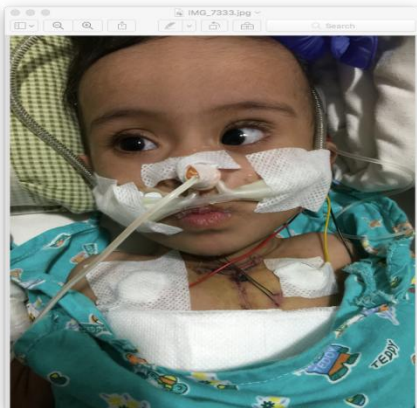




POST OPERATIVE DIET



POD	FEEDING ROUTE	DIET PRESCRIBED	CALORIES (Kcals)	PROTEIN (gm)
Day 8	NG	RTF @ 24ml/hr 90 % MCT	449	9.6
Day 9-10	NG	RTF @ 30 ml/hr 90% MCT	509	12
Day 11	ORAL	MCT Based Liquid diet	484	10
Chyle leak resolved Chest drainage tube removed				
Day 12 - 13	Oral	MCT Based semisolid diet	580	12





Day 14- Discharge

Diet : MCT Based semisolid diet

Calorie -100kcal / kg

Protein - 2gm/kg day

Review after 1 week

Weight : 7.5 kg

Diet advised : Semisoild Diet

On follow up (After 2 months)

Weight : 9.3 Kg

Height : 73 cm

Nutritional status :

Well nourished





Incorporating MCT into the Diet : A CHALLENGE



- Sip or eat slowly
- Start with small volume. Taken as small “shots”
- Flavourings can be added.
- Add to a fat free beverage of choice.
- Consider diluting with equal volume of water or other fat free hot cereals, mashed potatoes, vegetables , applesauce etc





Things to remember

- Virtually impossible to remove all fat from the diet. Many fruits, vegetables and even “fat free” products contain traces of fat .
- Coconut oil and MCT are not the same, as only 66% of coconut oil is MCT—the rest is long chain fat
- MCT is available as MCT oil and contain 100ml -780kcal
- Fat-soluble vitamins and EFA may need to be supplemented.





NUTRITIONAL MANAGEMENT OF CHYLOTHORAX IN CARDIO THORACIC INTENSIVE CARE UNIT

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UNPUBLISHED DATA





OBJECTIVE :

Our observational study attempts to reveal the best options for the nutritional care plan for chyle leak .

METHODOLOGY

Patients who had chyle leak after cardiac surgery were included

Parameters Includes -

- Anthropometry
- Biochemical
- Chyle leak volume
- Post Operative Day -Chyle detected and stopped
- Diet plan were analysed until progress towards resolution





NUTRITIONAL INTERVENTIONS



Various nutritional strategies were applied in the management of Chylothorax in the cardiothoracic intensive care unit of our centre

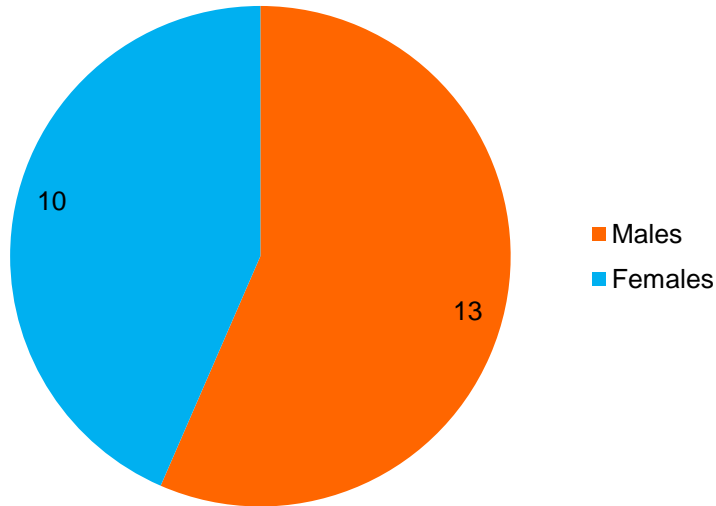
- Exclusive Medium Chain Triglyceride (MCT) feeds (90 % and 60 %)
- MCT feeds(90% and 60%) with fat free diet



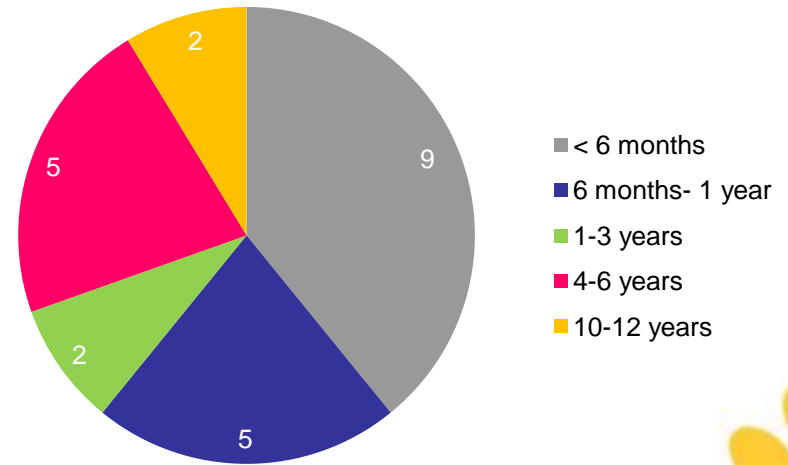


RESULTS

DISTRIBUTION BASED ON SEX

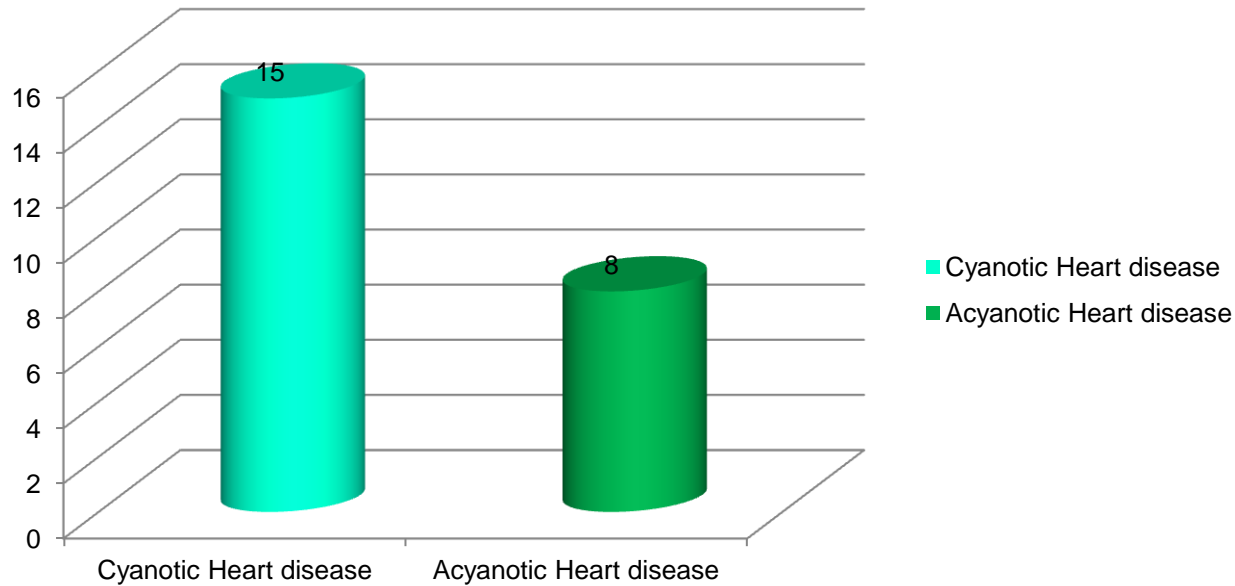


DISTRIBUTION BASED ON AGE





DISTRIBUTION BASED ON DIAGNOSIS



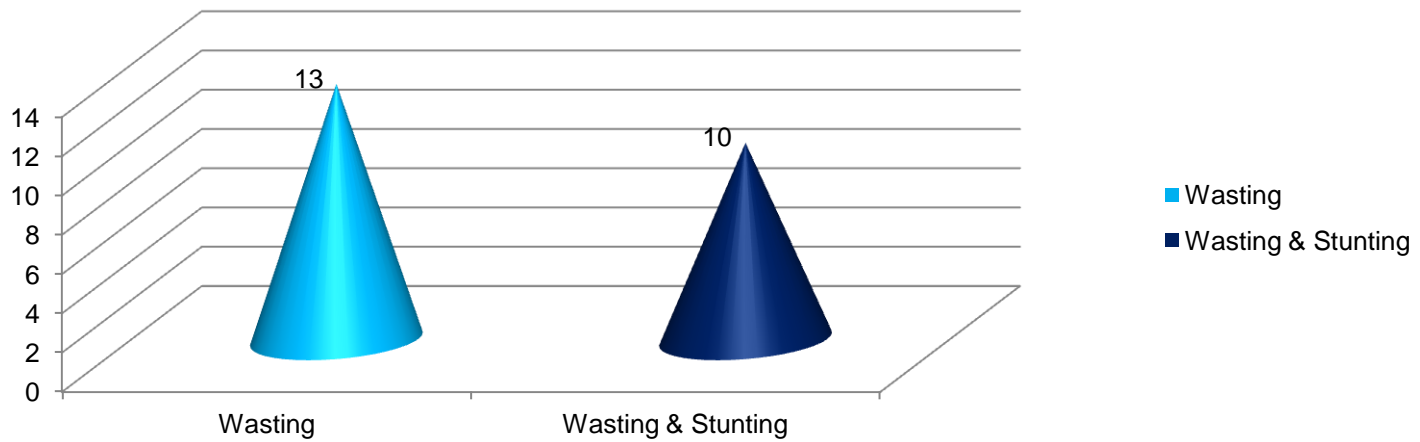
Chyle leak was predominant in Cyanotic heart disease subjects than Acyanotic heart disease subjects





NUTRITION ASSESSMENT

Distribution based on Nutritional status





Composition of MCT products

NUTRITIONAL INFORMATION (per 100gms)	90 % MCT FEED	70% MCT	68% MCT FEED	60% MCT FEED (NOT AVAILABLE)	48% MCT
Energy (Kcals)	424	475	465	464	463
Protein (gms)	11.4	14.25	17.5	13	12.9
Fat (gms)	11.8	18.5	17.4	16.9	16.5
Osmolality (mOsm/kg0)	250	420	360	312	370





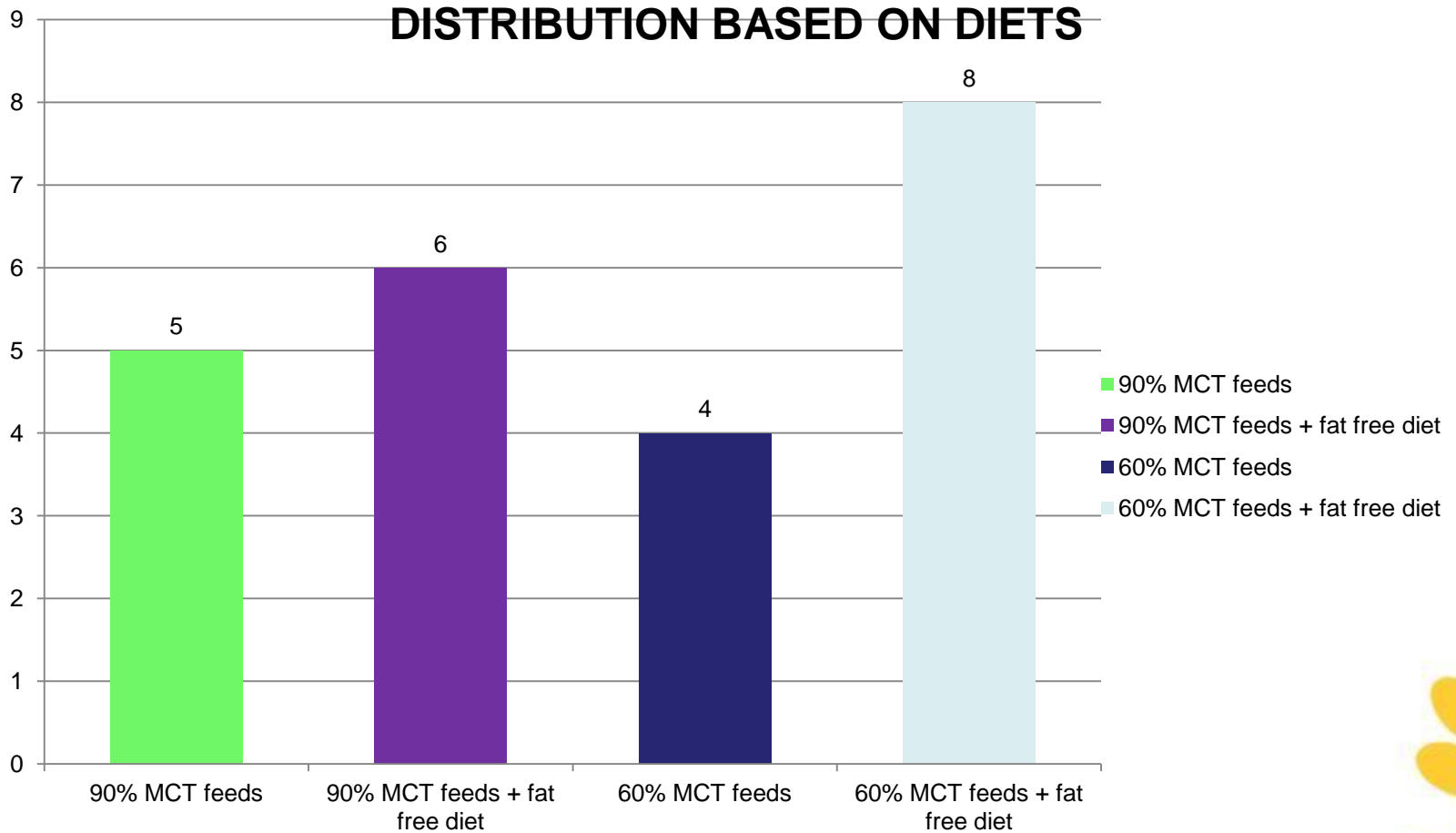
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Protein (gms)	11.4	14.25	17.5	13	12.9
Fat (gms)	11.8	18.5	17.4	16.9	16.5
MCT	10.6	12.95	12.2	10.5	7.9
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DIET DISTRIBUTION

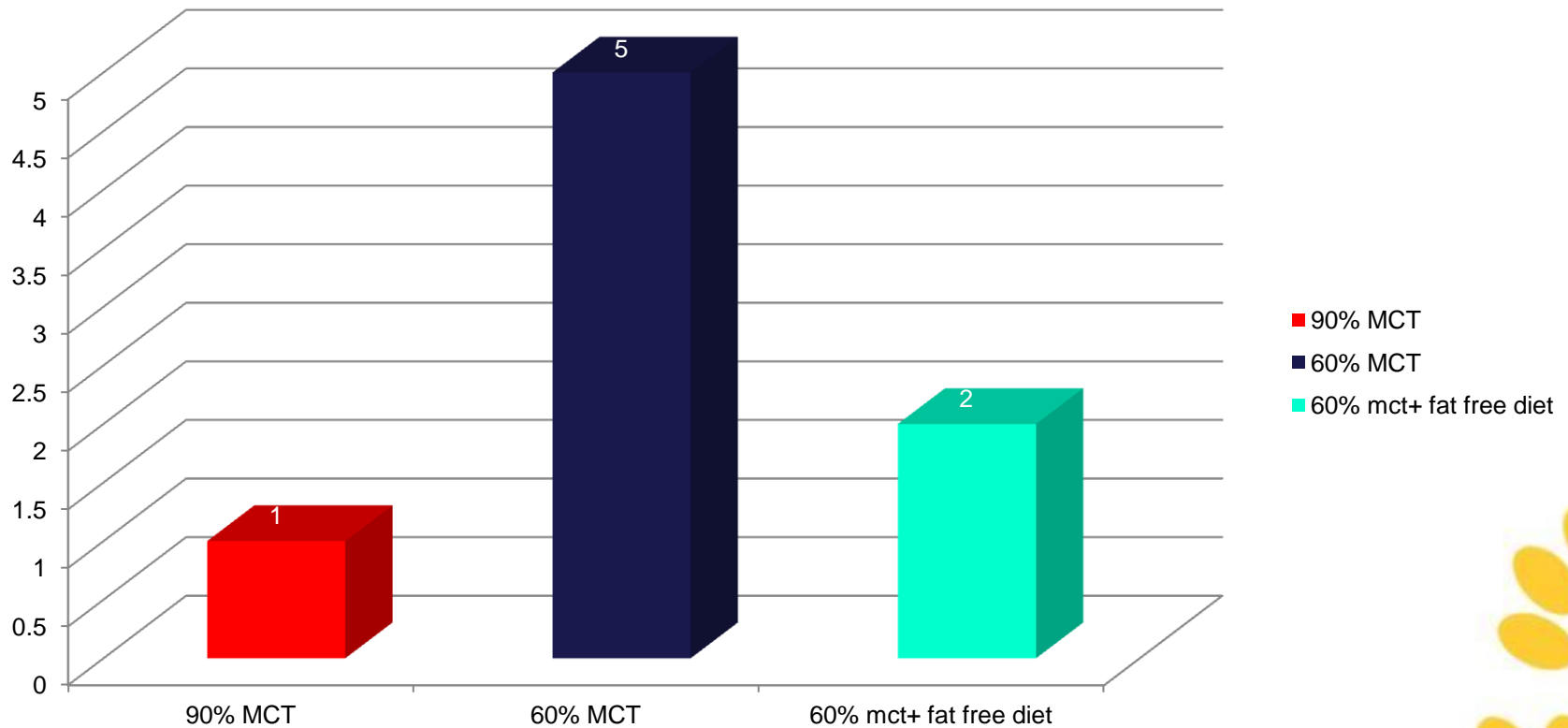




OCTREOTIDE



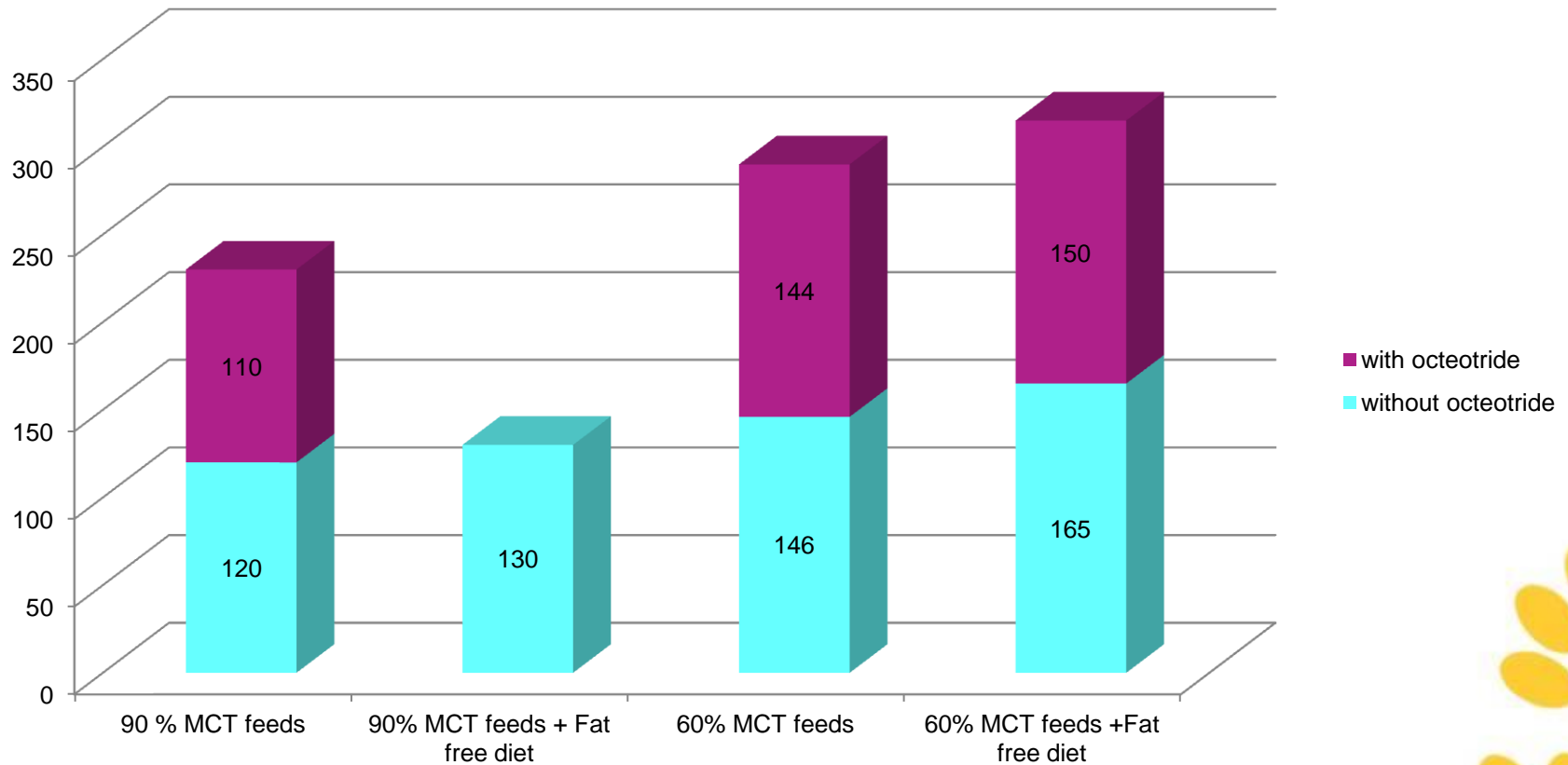
Number of patients with octeotride





MEAN VOLUME OF CHYLE

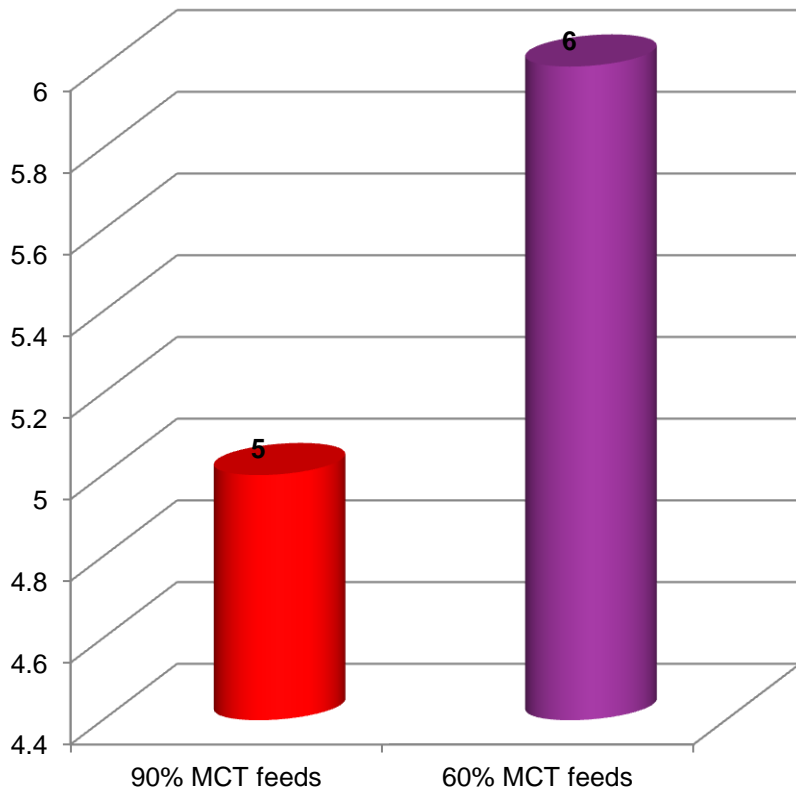
Mean volume of chyle



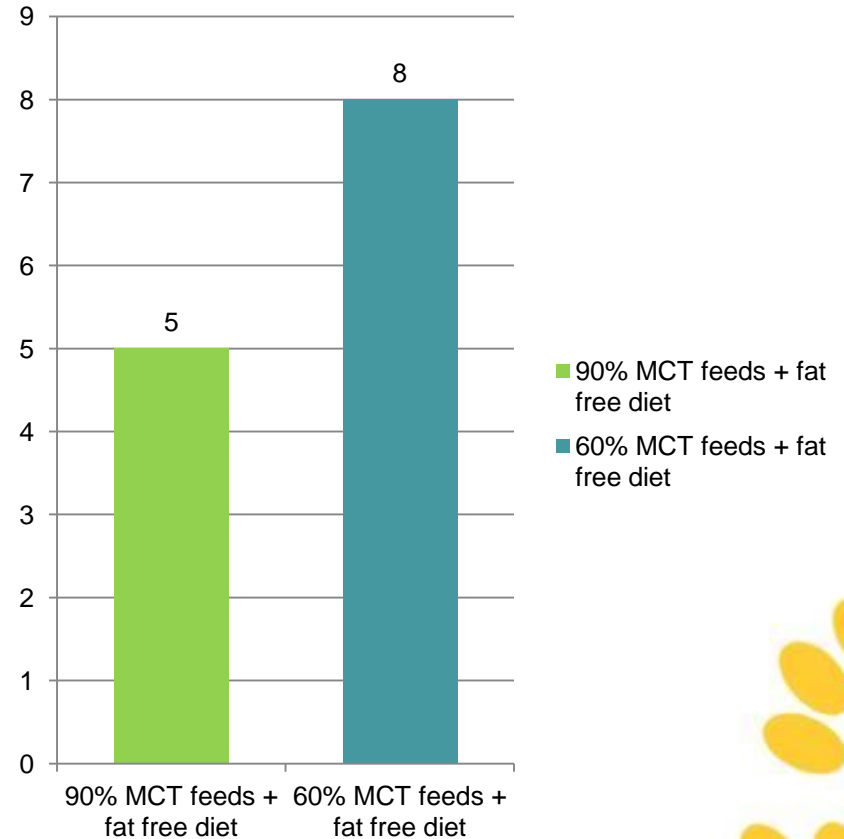


COMPARISON BETWEEN 90% & 60% MCT FEEDS

Duration of Drainage

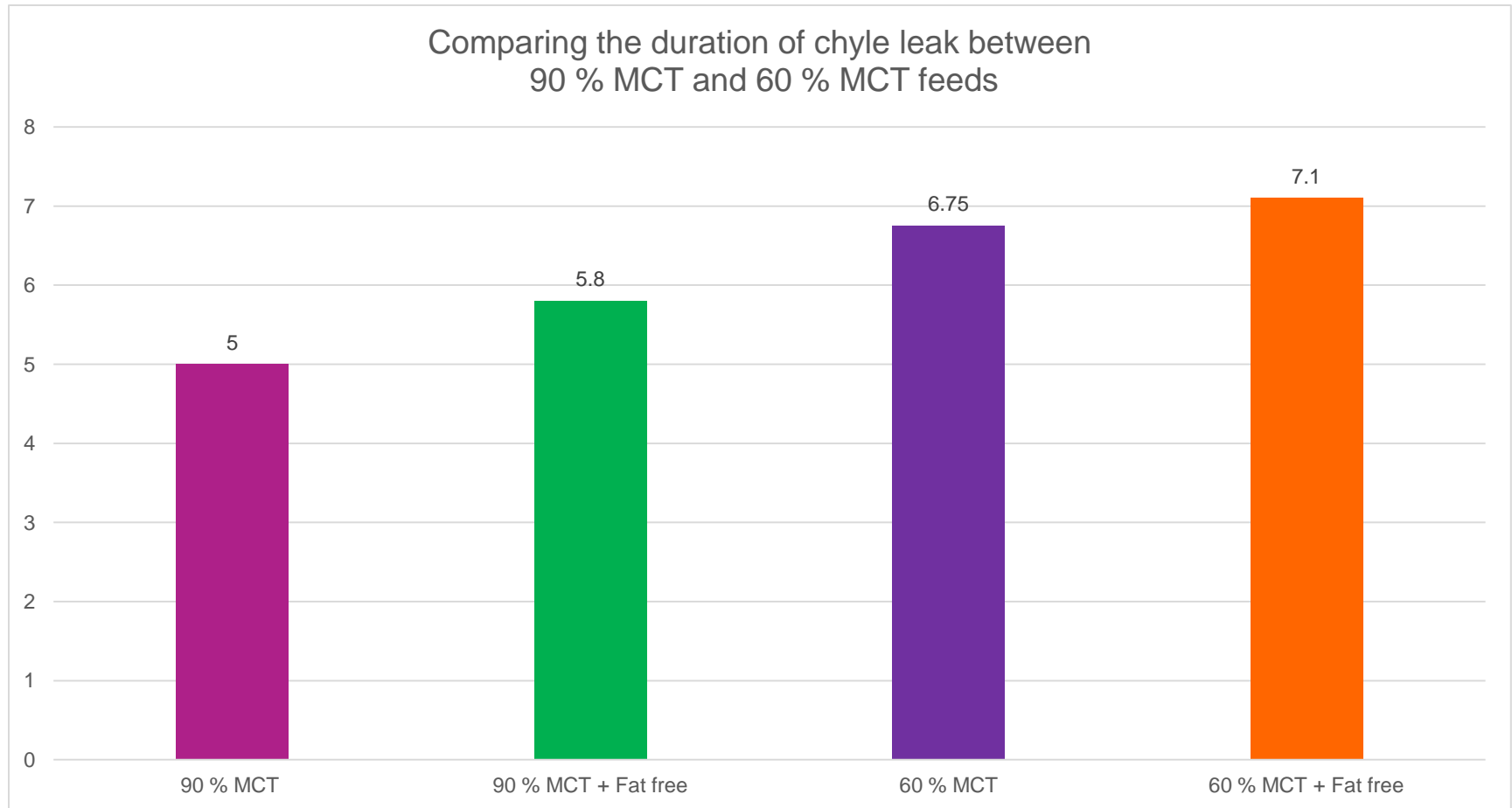


Duration of Drainage





COMPARISON OF THE DAY CHYLE STOPPED





CONCLUSION



- MCT is a vital adjunct for the treatment of Chylothorax in post operative cardiac patients.
- Ideally a 90% MCT seem to resolve the condition faster than lesser concentration (60% MCT).
- Due to non-availability in India / Cost constrain of importing 90% MCT feed, 60 - 70% MCT can be used as it has a significant impact in the course of the illness





THANK YOU

