RESULTS

Results

Description of newborn tympanic membrane:-

This was done in 20 full term infants aging 1 to 15 days with 10 cases aging 1 week and 10 cases aging 2 weeks. (see table I) As regard to sex distribution, there were 10 males and 10 females. (seeteble II)

The external auditory canal was partly filled with vernix caseosa. The skin of external auditory canal was collapsed in the resting state and easily distended by pneumatic pressure. The annulus fibrosis was not seen and the angle formed by tympanic membrane and external auditory canal was markedly obtuse. The pars flaccida appears thick. Vascular and red in over half of ears examined. In addition, it was poorly defined, the posterior malleolar fold being more commenly seen than anterior.

The lateral process of malleus was constant and helpfull landmark. The manubrium assumed a horizontal orientation and the umbo was positioned far medially and only seen in half of the ears.

The pars tensa was usually dull, opaque and appeared red in 5% of ears which were otherwise normal. The horizontal orientation was exaggerated with the superior portion closest to the examiner . the light reflex was absent or irregular probebly because of the horizontal orientation of the pars flaccida.

Care was required to distinguish external auditory canal motion from tpmpanic membrane mobility on pneumatic massage. All tymponic membrnes were mobile to positive and negative pressure although the excursions appeared to be less than expected as well as less than those of the external auditory canal skin.

Impedance testing diagnosed 2 infants (4 ears) with MEE (10 %). (see table IV). Both infants were aging 1 week. (see table I). As regard sex distribution, there was 1 male and 1 female.(see table II). the remaining tympanograms were within normal limits and external auditory canal volumes were small in the range of 0.4 : 0.6 c.c.

Prevelance

The present study included 60 ears of intensive care unite neonates (10 females and 20 males) with 5 males and 4 femles affected with MEE, (see table II) . Ages ranged from 1 day up to 15 days with 12 infants were aging 1 week and 18 infants were aging 2 weeks(see table I), and gestatinal peried ranged from 28 weeks up to full term. Average weight was 2.84 kgm with maximum weight 3.75 kgm and minimum weight 1.5 Kgm.

18 ears (30%) had MEE (see table IV), 6 ears (10%) had serous otitis media and 12 ears (20 %) had suppurative middle ear effusion.

A review of the completed otoscopic rating forms showed when an ear was judged as having MEE, the tympanic membrane was most often observed to be pink or red in 12 ears (66.7%)

and of normal colour in 6 ears (33.3%), opaque in 15 ears (85%) and translusant in 3 ears (15 %) , neutral in position in 7 ears (28.5%) and convex in 11 ears (61.5%) and to have reduced or absent mobility in 54 ears (90%) to positive or negative pressure.

In most cases the diagnosis of otitis media with effusion (OME) was applied to infants who were considered medically symptomatic in 8 infants (90%), The most frequent symptoms reported were nasal discharge in 6 cases and /or erythematous pharynx in 5 infants. To much lesser extent in 1 infant (10 % only). other symptoms and signs (fever, cough, irrtebility) were also present.

Tympanometric changes

Full term infants showed 2 infants (4 ears) (10%), with bilateral MEE with flat curves (Type B). (see table III)
As regard for ICU neonates, we found that : -
(1) 7 cases showed bilateral MEE with flat curves (Type B).
(2) 2 cases showed unilateral MEE with flat curves (Type B), unilteral Eustachian malfunction with negative peak curves (type c) (see table III).

In other terms, 18 ears showed tympanometric changes and 43 ears showed normal tympanegrams (type A).
(1) 16 ears showed secretory otitis media with flat cures (type B).

(2) 2 ears shwoed Eustachian malfunction (type c curve) with negative peak.

Acoustic Reflex

It was absent in all ears with MEE which were 20 ears. (16 of ICU neonates and 4 ears of fullterm) (see table III).
* As regard unilateral and bilatral MEE in both ICU and full term infoants, ICU reonates showed 2 cases with unilateral MEE (6.7%) and 7 cases with bilateral MEE (23.3%). Full term infants showed 2 infants with bilateral MEE (10%) and no cases with unilateral MEE (0%).(see table V)

As regard percentage of MEE in relation to risk, we found that premature babies with 18 ears showed 6 ears with MEE (33.3%) babies with pneumonia having 12 ears shewed 6 ears with MEE (50%) , babies with jaundice having 10 ears shewed 2 ears with MEE (20%), babies with septicaemia having 6 ears showed 4 ears with MEE (66.7%) and babies with cyanosis, diarhea and hypokalaemie showed no ears with MEE (0%). (See table III)

As regard uniletral and bilateral MEE in relation to risk, we found that 3 premature babies showed bilateral MEE (100%) , 1 baby with jaundice showed bilateral MEE (100%) , also 3 babies with pneumonia showed 1 case with unilateral MEE (33.3%) and 2 cases with bilateral MEE (66.7%), and 2 neonates with septicaemia showed bilateral MEE (100%). (See table VII)

Bacteriology

Tympanocentesis was performed on 12 ears of ICU neonates with suppurative MEE and 40 ears of fullterm infants with suppuretive MEE. Middle ear origine of isolated organisms was documented by simultaneus negative external ear canal culture and poitive middle ear culture and gram stains showing multiple white blood cells with in tracellular bacteria. B-streptococci, H. influenza and staphylococci were the most frquently isolated organisms.B-streptococci accounted for 6 ears (50%) of ICU neonates, gram negative enteric organisms accounted for 4 ears (33.3%) and staphylococcal species accounted for 2 ears (16.7%). In the full term infants, B-streptococci accounted for 16 ears (40%), gram regative organisms in 10 ears (25%), H. influenza in 10 ears (25%), and staphylococcal species in 4 ears (10%). (see table VIII)

As regard type of organism in relation to risk, we found that 1 premature baby with suppurative MEE showed staphylococci (100%), also 2 cases with pneumonia showed 1 case with B-streptococci (50%) and 1 case with gram negative enteric orgonisms (50%), the 2 neonates with septicaemia showed B-streptococci (100%) and jaundiced baby showed both stophylococci and gram negative enteric organisms (100%). (See table IX)

Table I (A)

Age distribution in ICU neonates .

Age	Coses With MEE	Percent	Cases with NO MEE	Percent	Total	Percent
First week	3	10 %	9	30 %	12	40 %
Secend week	9	20 %	12	40 %	18	60 %
Total	9	30 %	21	70 %	30	100 %

$X^2 = 0.24$ $P > 0.05$

Table I (B)

Age distribution in full term neonates .

Age	M E E	Percent	Normal	Percent	Total	Percent
First week	2	10 %	8	40 %	10	50 %
Secend week	-	0 %	10	50 %	10	50 %
Total	2	10 %	18	90 %	20	100 %

Table Ⅱ

Sex distribution of both ICU & full term neonates .

Sex	M E E	No MEE	Total
Male	6	24	30
Female	5	15	20
Total	11	39	50

$X^2 = 0.71$ $P > 0.05$

Table Ⅲ

Tympanometric Changes

Groupofinfant	Ears	Acoustic R.	Tympanogram	Diagmosis	Percent
ICU	16	Absent	Flat curve (B)	M E E	26.7 %
	2	Present	Negative Peak curve (C)	Eustachian Malfunction	3.3 %
	42	Present	Normal curve (A)	Normal	70 %
fullterm	4	Absent	Flat curvs (B)	MEE	10 %
	36	Present	Normal curvs (A)	Normal	90 %

Table Ⅳ

Comparisone of MEE in both groups

	Ears With MEE	Ears with No MEE	Total
ICU	18	42	60
full term	4	36	40
Total	22	78	100

$X^2 = 5.59$ $P < 0.05$ Significant

Table Ⅴ

Unilateral and bilateral MEE in both groups .

	ICU Cases	Percent	Full term Cases	Percent
Unilateral MEE	2	6.7 %	-	0 %
Bilateral MEE	7	23.3 %	2	10 %
Total	9	30 %	2	10 %

Table Ⅵ

Middel Ear Effusion In Relation To Risk

Risk	Total No. Of Ears	Ears with MEE	Percentage %
Prematurity	18	6	33.3 %
Pneumonia	12	6	50 %
Septicaemia	6	4	66.7 %
Jaundice	10	2	20 %
Cyanosis	10	—	0 %
Diarrhea	2	-	0 %
Hypokalaemia	2	-	0 %
Total	60	18	30 %

Table Ⅶ

Unilaterality And Bilaterality In Relation To Risk .

Risk	No. of Affected Cases	Unilateral MEE		Bilateral MEE	
		No. of cases	Percent	No. of cases	Percent
Prematurity	3	-	0 %	3	100 %
Septicaemia	2	-	0 %	2	100 %
Jaundice	1	-	0 %	1	100 %
Pneumonia	3	1	33.3 %	2	66.7 %
Total	9	1	22.2 %	8	77.8 %

See Figure Ⅰ

Table Ⅷ

Bacteriology Of MEE In Both Groups .

Group of infants	Organism	No. of ears	Percent
ICU neonates	B-streptococci	6 ears	50 %
with suppurative	Gram negative enteric org.	4 ears	33.7 %
MEE	Staphylococcal species	2 ears	16.7 %
Fullterm neonates	B.Streptococci	16 ears	40 %
with suppurative	Gram negative enteric org.	10 ears	25 %
MEE	H. influanza	10 ears	25 %
	Staphylococcal species	4 ears	10 %

See Figure Ⅱ

Table Ⅸ

Relation Between Risk & Type Of Organism

Risk \ Organism	No. of Affected Cases	B- sTreptoccci		G.-ve enteric org.		H. influanza		Staphylococci	
ICU Neonates		No. Of Cas.	Percent	No. of cases	Percent	No. Of cas.	Percent	No. Of Cas.	Percent
Premature	1	-	0 %	-	0 %	-	0 %	1	100 %
Pneumonia	2	1	50 %	1	50 %	-	0 %	-	0 %
Septicaemia	2	2	100 %	-	0 %	-	0 %	-	0 %
Jaundice	1	-	0 %	1	100 %	-	0 %	1	100 %

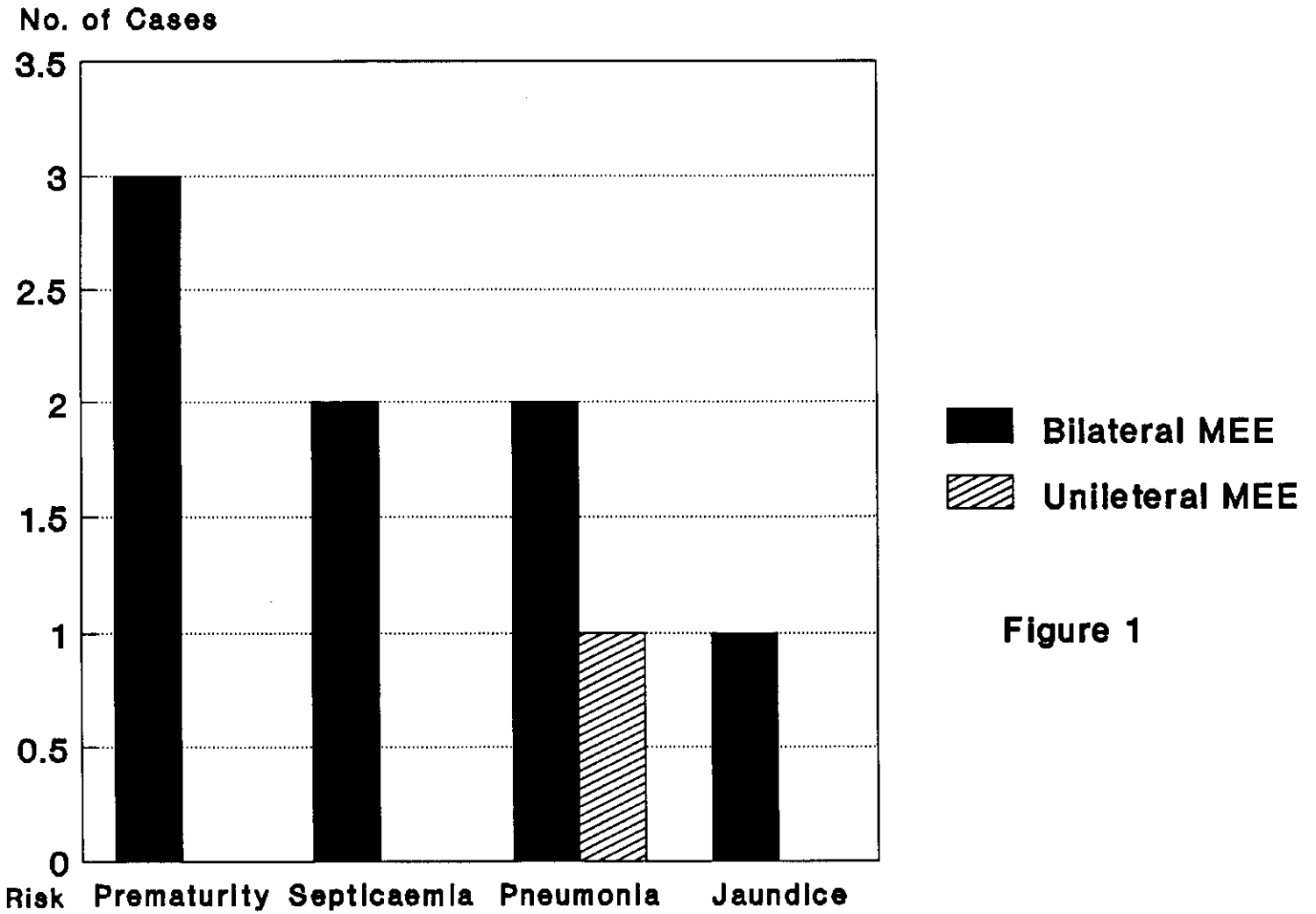
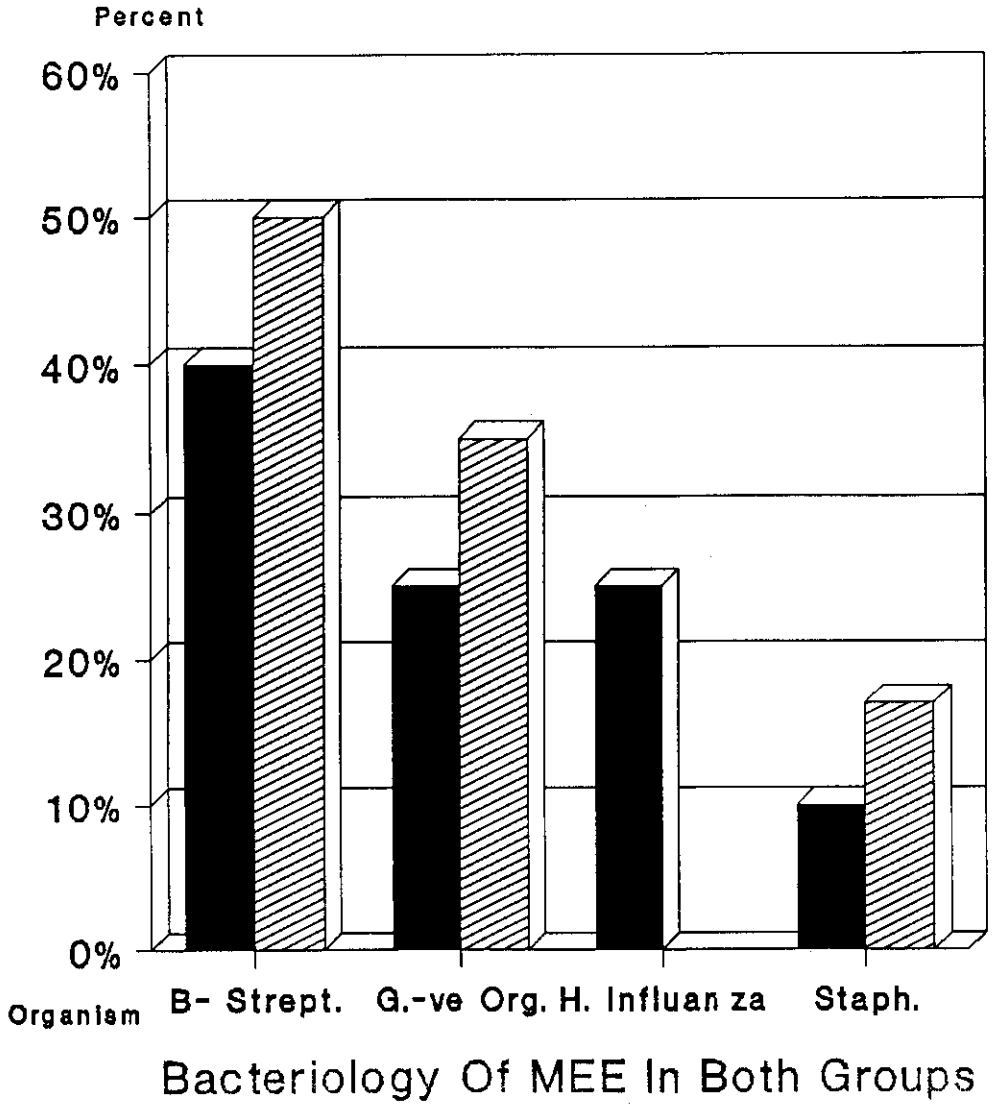


Figure 1

Unilaterality And Bilaterality In Relation To Risk


Percent
60%
50%
40%
30%
20%
10%
0%
Organism
B- Strept.
G.-ve Org.
H. Influan za
Staph.
Bacteriology Of MEE In Both Groups

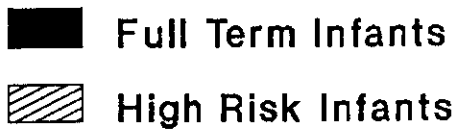

Full Term Infants
High Risk Infants

Figure 2