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CENTRAL AUDITORY PROCESSING
IN CHILDREN WITH A HISTORY
OF NEONATAL JAUNDICE

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A thesis submitted to the University of Auckland
in partial fulfilment of the requirements
for the degree Doctor of Philosophy
An experimental group (Group A) of 22 children around 7 years of age who had normal hearing for pure tones but who had experienced neonatal jaundice with peak bilirubin levels of at least 300 \( \mu \text{mol/l} \) was tested on a range of audiological tests selected to assess aspects of their central auditory processing. Children who had not been tested for bilirubin level were selected as control subjects (Group B); they were matched on the variables gender, race, gestational age, birthweight, Apgar scores and occurrence of respiratory problems. A smaller experimental group, Group C \((n=7)\), with peak bilirubin levels between 250 and 299 \( \mu \text{mol/l} \) but with perinatal complications was also studied. The experimental groups had higher mean acoustic reflex thresholds and lower mean reflex amplitudes than the control group. Acoustic reflex threshold patterns of abnormality consistent with central dysfunction occurred in two children from the main experimental group and two children in the control group. None of the children from Group C showed abnormal reflex thresholds. Acoustic reflex amplitude patterns of abnormality consistent with central dysfunction were present in six children from Group A and two children from Group C, compared with three children from the control group. Masking level differences were absent in five subjects from Group A and three children from Group C, compared with three control subjects. No group differences were evident for ABR latency or amplitude measures, but poor morphology or repeatability of wave V was observed in ten subjects from Group A and three children from Group C, compared with five children from the control group. A larger number of failures within the experimental groups was found for two of the four speech tests, that is, for interrupted and filtered speech tests, but not speech in noise or competing words tests. Five children from Group A (but none from Group C) performed poorly on the interrupted speech test, compared with two from
Group B. The filtered speech test was failed by six children from Group A and two children from Group C, compared with two from Group B. Parental reports of behavioural or learning disorders were distributed equally among the groups and were not associated with particular patterns of test failure. Overall, children in the experimental groups failed significantly more tests of central auditory functioning than did children in the control group ($F(2,48) = 5.5, p < .01$). The results were interpreted as implicating jaundice in long-term central auditory processing abnormalities.
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CONTENTS

List of Figures vii
List of Tables viii
Introduction 1
Pathological effects of hyperbilirubinemia
   Early research 6
   Animal research 6
   Short-term effects 9
   Long-term effects 11
   Treatment of hyperbilirubinemia 14
   Gender differences 20
Central Auditory Nervous System
   Ascending pathways 21
   Descending pathways 21
Tests of Central Auditory Processing 26
   Acoustic reflexes 30
      Reflex measurement using immittance audiometry 30
      Function of the acoustic reflex 31
      Anatomy of reflex arc 34
      Acoustic reflex response parameters 37
      Acoustic reflex threshold 42
      Acoustic reflex amplitude 50
Auditory brainstem responses
   Neural generators of the ABR 53
   Effects of peripheral pathology 57
   Effects of CANS disorders 59
   ABRs in children with learning difficulties 61
Middle latency responses
   Neural generators of the MLR 65
   Effects of peripheral hearing loss 67
   Effects of CAP disorders 67
   MLRs in children 67
Masking Level Differences
   Stimulus parameters 71
   Effects of peripheral hearing loss 72
   Effects of CANS disorders 73
   MLDs in children 73
Speech tests of CAP
   Effects of peripheral hearing loss 76
   Effects of CANS pathology 77
   CAP speech test batteries 78
   Interrupted speech 79
   Filtered speech 81
   Speech in noise 84
   Competing words 85
   The SCAN test 89
Study Objectives 91
Method
   Development of database 93
   Subject selection 95
   Audiological test battery 99
   Equipment 100
   Test procedures 101
Data analysis 105
Results
1. Pure tone audiometry 106
2. Tympanometry 106
3. Acoustic reflex thresholds 107
4. Acoustic reflex amplitude 108
5. Auditory brainstem responses 114
6. Middle latency responses 134
7. Masking level differences 140
8. Speech tests 141
9. Inter-test relationships 144
   Behaviour problems 151
   Effects of degree and duration of jaundice 151
Discussion
   Subject selection 152
   Effects of neonatal jaundice 153
   Theoretical issues 156
   Audiological test results 157
      Acoustic reflexes 157
      Auditory brainstem responses 161
      Middle latency responses 162
      Masking level differences 163
      Speech tests 164
   Relationships between test results 164
Conclusion 166
References 167
Appendices
   A Analysis of perinatal database. 183
   B Subject information sheet. 195
   C NAC Interrupted Speech Test. 196
   D Subject details. 197
   E Results of analysis of variance. 215
   F Relative amplitude data. 221
List of Figures

1. Tonotopicity of the cochlear nuclei. .......................... 8
2. Ascending auditory pathways. .................................. 22
3. Descending auditory pathways. .................................. 27
4. Ipsilateral and contralateral acoustic reflex pathways. ....... 35
5. The influence of AR amplitude on ART. ......................... 39
6. Effect of sensorineural hearing loss on AR amplitude. ......... 41
7. Effects of eighth nerve and brainstem disorders on the acoustic reflex. 46
8. Description of five AR patterns. .................................. 47
9. Neural basis of ABR. ............................................... 55
10. Correlation of neural centres with ABR waveform. ........... 58
11. Example of MLR waveform. ....................................... 66
12. Varieties of MLR waveforms in normals. ....................... 69
13. Detectability of MLR waves as a function of age. ............. 70
14. Effect of interruption rate on speech intelligibility. .......... 80
15. Effect of filtering on speech intelligibility. .................. 83
16. Ear advantage in dichotic speech tests. .......................... 87
17. Distribution of PBLs among infants tested Feb 1982-Jan 1983. 94
18. Mean ARTs to stimuli presented contralaterally. ............. 111
19. Mean ARTs to stimuli presented ipsilaterally. ................ 112
20. Mean AR amplitude for contralateral stimuli. ................... 116
21. Mean AR amplitude for ipsilateral stimuli. ..................... 117
22. Means for average AR amplitude (for stimuli 90, 100 and 110 dB HL). 120
23. Correlation between middle ear compliance and average AR amplitude. 121
24. Mean relative AR amplitude (in dB re compliance) for contralateral stimuli. 125
25. Mean relative AR amplitude (in dB re compliance) for ipsilateral stimuli. 126
26. Number of children with AR amplitudes below 1 dB. .......... 128
   Presentation = contralateral. ................................. 128
27. Number of children with AR amplitudes below 1 dB. .......... 129
   Presentation = ipsilateral. ...................................... 129
28. Examples of AR amplitude for four subjects within Group A. 130
29. Examples of AR amplitude for three subjects within Group B. 131
30. Examples of two peripheral patterns of AR amplitude. ....... 132
31. Percentage of children in each group with ABR morphological abnormalities on one or both sides. .................. 137
32. Sample ABR traces from Group A. .............................. 138
33. Sample ABR traces from Groups B and C. ...................... 139
34. Mean number of test types failed for each group. ............ 145
35. Percentage of each group failing different tests. ............ 146
36. Mean number of test types failed by boys and girls in each group. 148

Appendices:
A-1. Percentage of children with PBLs exceeding 250 μmol/l as a function of gestational age. .......................... 186
A-2. Risk of deafness per 1000 births for various factors. ......... 194
D-9. Sample MLR traces. ............................................... 209
List of Tables

1. Mean MLDs for 500 Hz tones.  
2. Site of lesion and speech test performance.  
3. Mean pure tone thresholds at audiometric frequencies.  
4. Number of children with various tympanogram types.  
5. Mean ear canal volume and compliance.  
6. Mean ARTs for pulsed stimuli presented contralaterally.  
7. Mean ARTs for pulsed stimuli presented ipsilaterally.  
8. Number of children with absent ARs at 4000 Hz.  
9. Number of children with various patterns of ART abnormality.  
10. Mean AR amplitude (in ml/100) for contralateral stimulation.  
11. Mean AR amplitude (in ml/100) for ipsilateral stimulation.  
12. Mean average reflex amplitude.  
13. Mean relative AR amplitude for contralateral stimulation.  
14. Mean relative AR amplitude for ipsilateral stimulation.  
15. Number of children with various AR amplitude patterns.  
16. Mean ABR data.  
17. Mean MLDs.  
18. Mean interrupted speech scores.  
19. Mean raw scores on SCAN subtests.  
20. Mean standard scores on SCAN subtests.  
21. Number of children showing abnormal ear advantages in the competing words test.  
22. Factors contributing significantly to "prediction" of group.  
23. Inter-test correlations for right ear data.  
24. Inter-test correlations for left ear data.  

A-3. Incidence of jaundice in various Pacific Island groups.  
A-6. Percentage of each racial group with various maternal-infant blood-type combinations.  
A-7. Percentage of positive Coombs test in children of different races.  

D-1. Details of all children identified from the database with PBLs of at least 300 μmol/l.  
D-2. Personal and perinatal details of subjects.  
D-4. Summary of abnormal AR amplitude indices for each subject.  
D-5. Summary of AR and MLD data for each subject.  
D-6. Summary of ABR data for each subject.  
D-7. Summary of ABR morphology for each subject.  
D-8. Number of peaks and troughs recorded for each subject during MLR testing.  
D-9. Summary of speech test data for each subject.  
D-10. Data summary for each subject.  
D-11. Summary of test failures for each subject.  
E-1. Analysis of variance results for pure tone threshold.  
E-2. Analysis of variance results for middle ear compliance.  
E-3. Analysis of variance results for ear canal volume.
E-4. Analysis of variance results for ART 216
E-5. Analysis of variance results for AR amplitude (ml) 217
E-6. Analysis of variance results for AR amplitude (dB) 218
E-7. Analysis of variance results for ABR I-III interval. 219
E-8. Analysis of variance results for ABR I-V interval. 219
E-9. Analysis of variance results for ABR relative amplitude 219
E-10. Analysis of variance results for MLD. 219
E-11. Analysis of variance results for interrupted speech. 220
E-12. Analysis of variance results for SCAN subtests. 220
F-1. Acoustic reflex amplitude (ml) to dB conversion table. 221