WEEKLY EPIDEMIOLOGICAL REPORT

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Alzheimer's Disease

This article is published to mark the Alzheimer's day which fell on the 21st of September.

Background

Alzheimer's disease is a progressive brain disorder that damages and eventually destroys brain cells, leading to loss of memory, thinking and other brain functions. Alzheimer's is not a part of normal ageing, but results from a complex pattern of abnormal changes. It usually develops slowly and gradually and gets worse as more brain cells wither and die. Ultimately, Alzheimer's is fatal, and currently, there is no cure.

Alzheimer's disease is the most common type of dementia, a general term used to describe various diseases and conditions that damage brain cells. Alzheimer's disease accounts for 50 to 80 percent of dementia cases.

Disease burden

In 2006, the worldwide prevalence of Alzheimer's disease was 26.6 million. It is forecasted that by 2050, the prevalence will quadruple, by which time 1 in 85 persons worldwide will be living with the disease. It is estimated that 43% of prevalent cases need high level of care (equivalent to hospital care).

Causes

While it is known that Alzheimer's disease involves progressive brain cell failure, the reason for this is not clear. Like other chronic conditions, it is believed that Alzheimer's develops as a complex result of multiple factors rather than any one overriding cause. Both age and genetics have been identified as risk factors, but many questions still remain.

Age

Although Alzheimer's is not a normal part of ageing, the greatest risk factor for the disease is increasing age. After age 65, the risk of Alzheimer's doubles every five years. Therefore, after the age of 85years, prevalence of Alzheimer's reaches nearly 50 percent.

Family history

Research has shown that those who have a parent, brother, sister or child with Alzheimer's are more prone to the disease. The risk increases if more than one family member has the illness. When diseases tend to run in families, either heredity (genetics) or environmental factors or both may play a role.

Genetics

There are two categories of genes that influence whether a person develops a disease: (1) risk genes and (2) deterministic genes.

Risk genes increase the likelihood of developing a disease, but do not guarantee it will happen. APOE-e4 is the first risk gene identified, and remains the gene with the strongest impact on risk.

Everyone inherits a copy of some form of APOE from each parent. Those who inherit one copy of APOE-e4 have an increased risk of developing Alzheimer's. Those who inherit two copies have an even higher risk. In addition to raising the risk, APOE-e4 may tend to make symptoms appear at a younger age than usual. It is estimated that APOE-e4 is implicated in about 20 percent to 25 percent of Alzheimer's cases.

Deterministic genes directly cause a disease, guaranteeing that anyone who inherits one will develop a disorder. Scientists have found rare genes that cause Alzheimer's in only a few hundred extended families worldwide. These genes, which are estimated to account for less than 5 percent of Alzheimer's cases, cause familial early-onset forms in which symptoms usually develop between a person's early 40s and mid-50s.

Pathology

There are several specific brain abnormalities that occur in Alzheimer's disease. They are:

- Plaques- microscopic clumps of a protein called beta-amyloid peptide
- Tangles- twisted microscopic strands of the protein tau
- Loss of synapses
- Inflammation-resulting from the brain's effort to fend off the lethal effects of the other changes underway
- Eventual death of brain cells and severe tissue shrinkage

Contents	*Page*

Signs of Alzheimer's disease

- Memory loss that disrupts daily life
  One of the most common signs of Alzheimer's is memory loss, especially forgetting recently learned information. Others include forgetting important dates or events; asking for the same information over and over; relying on memory aides (e.g. reminder notes or electronic devices) or family members for things they used to handle on their own.

- Challenges in planning or solving problems
  Some people may experience changes in their ability to develop and follow a plan, or work with numbers. They may have trouble following a familiar recipe or keeping track of monthly bills. They may have difficulty in concentrating and take much longer to do things than they did before.

- Difficulty in completing familiar tasks at home, at work or at leisure
  People with Alzheimer's often find it hard to complete daily tasks. Sometimes, people may have trouble driving to a familiar location, managing a budget at work or remembering the rules of a favorite game.

- Disorientation in time and place
  People with Alzheimer's can lose track of dates, seasons and the passage of time. They may have trouble understanding something if it is not happening immediately. Sometimes they may forget where they are or how they got there.

- Trouble in understanding visual images and spatial relationships
  For some people, having vision problems is a sign of Alzheimer's. They may have difficulty in reading, judging distance and determining colour or contrast. In terms of perception, they may pass a mirror and think someone else is in the room. They may not realize that he or she is the person in the mirror.

- New problems with words in speaking or writing
  People with Alzheimer's may have trouble following or joining a conversation. They may stop in the middle of a conversation and have no idea how to continue or they may repeat themselves. They may struggle with the vocabulary, have problems finding the right word or call things by the wrong name

- Misplacing things and losing the ability to retrace steps
  A person with Alzheimer's disease may put things in unusual places. They may lose things and be unable to go back over their steps to find them again. Sometimes, they may accuse others of stealing. This may occur more frequently over time.

- Decreased or poor judgement
  People with Alzheimer's may experience changes in judgment or decision making. For example, they may use poor judgment when dealing with money (e.g. giving large amounts to telemarketers). They may pay less attention to grooming or keeping themselves clean.

- Withdrawal from work or social activities
  A person with Alzheimer's may start to abstain themselves from hobbies, social activities, work projects or sports. They may have trouble keeping up with a favourite sports team or remembering how to complete a favorite hobby. They may also avoid being social because of the changes they have experienced.

- Changes in mood and personality
  The mood and personalities of people with Alzheimer's can change. They can become confused, suspicious, depressed, fearful or anxious. They may be easily upset at home, at work, with friends or in places where they are out of their comfort zone.

Drug treatment

Currently approved Alzheimer's drugs have two different mechanisms of action:

- Cholinesterase Inhibitors
  In Alzheimer's disease, these brain cells start to die and the amount of acetylcholine (a neurotransmitter) is very much reduced. Memory starts to suffer. Cholinesterase Inhibitors reduce the breakdown of acetylcholine and increases its levels in the brain. This reduces some of the symptoms of Alzheimer's disease. Donepezil, Galantamine, Rivastigmine and Tacrine are cholinesterase inhibitors.

- NMDA (N-methyl-D-aspartate) receptor antagonists
  NMDA receptor antagonists, which work by regulating the activity of glutamate, a chemical messenger involved in learning and memory. They protect brain cells against excess glutamate, a chemical messenger released in large amounts by cells damaged by Alzheimer's disease and other neurological disorders. Attachment of glutamate to cell surface NMDA receptors permits calcium to flow freely into the cell. Over time, this leads to chronic overexposure to calcium, which can speed up cell damage. Memantine, a licensed NMDA receptor antagonist, prevents this destructive chain of events by partially blocking the NMDA receptors.

On average, the five approved Alzheimer's drugs are effective for about six to 12 months for about half of the individuals who take them.

New drugs

Current drugs help mask the symptoms of Alzheimer's, but do not treat the underlying disease. A breakthrough Alzheimer's drug would treat the underlying disease and stop or delay the cell damage, which is responsible for the worsening of symptoms. There are several promising drugs in development and testing stages. Some examples of new drugs are Rember, Plaques, Dimebon and Etanercept

The role of Vitamin E

Some studies suggest that taking Vitamin E can retard the progression of Alzheimer's disease. However, more research needs to be done in this regard. It can interfere with blood clotting and should be used with caution in people with a clotting disorders, but it can be used with aspirin.

In 2004, a review of studies suggested that doses of over 400 units of vitamin E daily probably do more harm than good. Some experts therefore suggest that not more than 200 units a day should be taken.

There is some evidence that a diet rich in natural Vitamin E may reduce the risk of developing Alzheimer's disease.

Sources

What We Know Today About Alzheimer's Disease , available from
http://www.alz.org/research/science/zheimers_research.asp#timeline,
http://www.alz.org/research/science/alzheimersdisease_causes.asp,
http://www.alz.org/research/science/heimers_disease_treatments.asp

Drug treatments in Alzheimer's, available from
http://www.rcpsych.ac.uk/mentalhealthinfo/alzheimersanddementia/drugtreatmentofalzheimers.aspx

Compiled by Dr. Madhava Gunasekera of the Epidemiology Unit.

Table 1: Vaccine-preventable Diseases & AFP

17th – 23rd September 2011 (38th Week)

Disease	No. of Cases by Province									Number of cases during current week in 2011	Number of cases during same week in 2010	Total number of cases to date in 2011	Total number of cases to date in 2010	Difference between the number of cases to date in 2011 & 2010
	W	C	S	N	E	NW	NC	U	Sab					
Acute Flaccid Paralysis	01	01	00	00	00	00	00	02	00	04	00	68	66	+ 03.0 %
Diphtheria	00	00	00	00	00	00	00	00	00	-	-	-	-	-
Measles	00	00	00	00	00	00	00	00	00	00	00	106	76	+ 39.5 %
Tetanus	00	00	00	00	00	00	00	00	00	00	00	20	18	+ 11.1 %
Whooping Cough	01	00	00	01	00	00	01	00	00	03	00	44	27	+ 62.9 %
Tuberculosis	115	24	00	21	23	31	19	12	13	258	334	6873	7104	- 03.3 %

Table 2: Newly Introduced Notifiable Disease

17th – 23rd September 2011 (38th Week)

Disease	No. of Cases by Province									Number of cases during current week in 2011	Number of cases during same week in 2010	Total number of cases to date in 2011	Total number of cases to date in 2010	Difference between the number of cases to date in 2011 & 2010
	W	C	S	N	E	NW	NC	U	Sab					
Chickenpox	10	06	05	03	10	06	06	10	10	66	74	3259	2559	+ 28.8 %
Meningitis	05 GM=3 KL=2	02 ML=2	02 GL=1 MT=1	00	00	01 KN=1	00	01 BD=1	06 RP=5 KG=1	17	18	661	1274	- 48.1 %
Mumps	03	10	05	05	06	07	04	02	07	49	22	2395	885	+ 170.6 %
Leishmaniasis	00	00	21 HB=17 MT=4	00	00	00	17 AP=16 PO=1	00	00	17	05	595	258	+ 130.6 %

Key to Table 1 & 2

Provinces: **W**: Western, **C**: Central, **S**: Southern, **N**: North, **E**: East, **NC**: North Central, **NW**: North Western, **U**: Uva, **Sab**: Sabaragamuwa.

DPDHS Divisions: **CB**: Colombo, **GM**: Gampaha, **KL**: Kalutara, **KD**: Kandy, **ML**: Matale, **NE**: Nuwara Eliya, **GL**: Galle, **HB**: Hambantota, **MT**: Matara, **JF**: Jaffna, **KN**: Killinochchi, **MN**: Mannar, **VA**: Vavuniya, **MU**: Mullaitivu, **BT**: Batticaloa, **AM**: Ampara, **TR**: Trincomalee, **KM**: Kalmunai, **KR**: Kurunegala, **PU**: Puttalam, **AP**: Anuradhapura, **PO**: Polonnaruwa, **BD**: Badulla, **MO**: Moneragala, **RP**: Ratnapura, **KG**: Kegalle.

Data Sources:

Weekly Return of Communicable Diseases: Diphtheria, Measles, Tetanus, Whooping Cough, Chickenpox, Meningitis, Mumps.

Special Surveillance: Acute Flaccid Paralysis.

Leishmaniasis is notifiable only after the General Circular No: 02/102/2008 issued on 23 September 2008. .

Dengue Prevention and Control Health Messages

Thoroughly clean the water collecting tanks bird baths, vases and other utensils once a week to prevent dengue mosquito breeding.

Table 4: Selected notifiable diseases reported by Medical Officers of Health

17th – 23rd September 2011 (38th Week)

DPDHS Division	Dengue Fever / DHF*		Dysentery		Encephalitis		Enteric Fever		Food Poisoning		Leptospirosis		Typhus Fever		Viral Hepatitis		Human Rabies		Returns Received
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	%
Colombo	118	7392	2	156	0	6	13	178	3	53	19	338	0	7	1	57	0	2	**77**
Gampaha	68	2925	1	111	0	16	5	69	0	27	14	424	1	23	7	248	0	6	**80**
Kalutara	22	997	10	129	0	6	4	61	0	21	30	268	0	3	0	7	0	1	**92**
Kandy	36	758	4	328	0	7	2	27	0	38	2	143	2	94	0	48	0	0	**87**
Matale	6	266	9	143	1	4	0	27	0	19	1	151	0	14	0	8	0	0	**100**
Nuwara	3	159	1	297	0	4	2	50	0	89	1	45	2	61	5	24	0	1	**77**
Galle	18	669	0	82	0	6	2	21	0	6	14	176	1	36	0	10	0	5	**74**
Hambantota	6	342	2	52	0	4	0	3	0	29	3	467	3	55	1	12	0	1	**92**
Matara	15	390	3	73	0	2	1	14	1	29	21	284	1	62	1	17	0	1	**100**
Jaffna	5	266	14	228	0	3	6	211	2	73	0	2	0	194	4	27	0	1	**91**
Kilinochchi	0	49	2	24	0	3	0	9	0	12	0	2	1	11	0	3	0	0	**75**
Mannar	0	26	2	21	1	1	0	29	0	82	0	13	0	32	0	2	0	0	**100**
Vavuniya	0	66	0	25	0	12	0	9	0	48	0	44	0	2	0	1	0	0	**50**
Mullaitivu	0	15	0	51	0	1	0	4	0	9	0	5	0	1	0	2	0	0	**50**
Batticaloa	15	713	0	534	0	5	0	6	0	25	1	27	0	3	0	2	0	6	**86**
Ampara	0	125	4	108	0	1	0	10	0	47	0	56	0	1	0	7	0	0	**71**
Trincomalee	0	140	12	585	0	2	0	7	1	12	1	88	0	7	0	7	0	0	**75**
Kurunegala	21	735	7	285	0	12	0	83	1	74	11	1435	2	69	2	37	0	4	**83**
Puttalam	7	391	0	156	0	1	0	25	0	9	7	111	0	17	1	7	0	2	**67**
Anuradhapu	5	226	4	111	0	1	0	4	0	33	0	237	0	16	1	17	0	1	**84**
Polonnaruw	2	247	0	101	0	1	2	11	0	22	4	82	0	1	0	15	0	0	**71**
Badulla	5	481	5	291	0	5	1	50	0	9	6	72	0	74	1	56	0	0	**94**
Monaragala	5	202	6	93	0	4	0	31	0	13	0	173	1	63	7	69	0	0	**73**
Ratnapura	17	747	2	429	0	6	0	46	0	17	14	457	0	26	3	39	0	2	**83**
Kegalle	16	596	0	96	0	12	2	65	0	23	9	282	1	30	4	175	0	0	**73**
Kalmune	1	29	11	517	0	0	0	1	0	66	0	5	0	2	0	3	0	1	**69**
SRI LANKA	**391**	**18592**	**101**	**5026**	**02**	**125**	**40**	**1051**	**08**	**885**	**158**	**5387**	**15**	**904**	**38**	**900**	**00**	**34**	**82**

Source: Weekly Returns of Communicable Diseases WRCD).
***Dengue Fever / DHF** refers to Dengue Fever / Dengue Haemorrhagic Fever.
****Timely** refers to returns received on or before 23rd September , 2011 Total number of reporting units =329. Number of reporting units data provided for the current week: 269
A = Cases reported during the current week. **B** = Cumulative cases for the year.

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Comments and contributions for publication in the WER Sri Lanka are welcome. However, the editor reserves the right to accept or reject items for publication. All correspondence should be mailed to The Editor, WER Sri Lanka, Epidemiological Unit, P.O. Box 1567, Colombo or sent by E-mail to **chepid@sltnet.lk.**

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