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Road Traffic Accidents: Emerging Epidemic

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We are living in an age in which progress in neurosciences and other fields of medicine is mind-boggling. We are shifting from an individual patient's care to the care of the cells. The day is not far when pharmaco-genomics will enable to provide tailor made treatment to each individual. Human cloning, neural regeneration and application of stem cell researches are opening up almost unbelievable new vistas of medical care.

India is emerging as a medical power to reckon with. A number of state of the art corporate hospitals are providing world-class services at an affordable cost. But alas! One look at our backyard is enough to burst the bubble of our collective ego. What do we find? An abysmal state of affairs where even rudimentary care of trauma cases is not available.

As most of the neurotrauma occurs on the roads, this morning I am going to speak about the global and national magnitude and impact of the road traffic accidents and the resulting crippling neurological disabilities and finally, our role and responsibility as members of this society in trying to lessen this containable onslaught.

Enormity of the problem is obvious when one looks at the global burden of road traffic accidents. Nearly 50 million are injured and about 1.2 million die every year from these accidents. Global mortality is 97/100,000 population. About 850,000 are under 45 years of age, who are the sole bread-winners for their families in most of the developing countries. Every day, there are 3300 deaths and 6600 serious injuries on the road. According to WHO predictions, if a concerted effort is not made to improve the services by 2020, there will be 147% increase in RTA deaths in India.

The global annual cost of RTA is 230 billion dollars, of which the share of developing countries is 65 billion dollars, which is twice the total aid received for the National projects received in these countries. It is estimated that one-in-ten hospital beds is occupied by accident victim. In India, 12.75 lac people sustain serious injuries in RTAs and 1.2 lac die every year. Of these, 60-70% are between 14 and 45 years of age. A vehicular accident occurs every three minutes causing a death every ten minutes. Trauma related death occurs every 1.9 minutes. India has 1% of the world's vehicles, but 6% of the total global RTA deaths. Economic loss amounts to Rs 550 crores (12.5 billion dollars), an amount that equals our defense budget.

Majority of RTA injuries are of the nervous system, predominantly of the brain. One person sustains traumatic brain injury (TBI) every 21 seconds in the United States. Out of one million Americans treated in emergency rooms, 2.3 lacs are hospitalized. There are 50,000 deaths every year and 85,000 people have resultant life-long disabilities. At present, 5.3 Americans are living with disabilities due to TBI and 50% of these are due to motor vehicle accidents. In our country, 60% of TBIs are caused by RTA. Fatality rate is 70/1000 vehicles, which is 25 times higher than in developed countries. Intoxication by alcohol as a causative factor is seen in 15-20% traffic accidents. Reported incidence of mortality due to severe TBI ranges from 38% to 43%. Rehabilitation needs of severe head injury are 100% and neuro-rehabilitation in our country is pathologically lacking.

The global impact of spinal cord injuries (SCI) is enormous. Incidence is 22 per million population. Average age is 33 years and 51% are single. Life expectancy is reduced by 10%. There are 1.3 lacs survivors each year, who become wheel-chair bound for rest of their lives, which averages more than 40 years. It is estimated that by the end of 2005, there will be over 2.5 million people with spinal cord injuries. Nearly 50% of SCI is due to RTA. The economic on the four major nations (US, UK, Canada, Australia) is 10 billion dollars. Incidence of SCI in the US is 40 per million population, and 11,000 new cases are added every year. SCI is seen in 40% of RTA victims. By July 2004, there were 247,000 survivors with SCI. Injury pattern elucidates the extent of injuries and disabilities: 47% have complete spinal cord lesions, 52% have incomplete lesions, only 1% regain full neurological recovery and 5% need life-long hospital care. Out of 200,000 vertebral column injuries each year, 10-15% have SCI as well, and 60% of SCI have associated TBI. It is shocking but true that 10,000 individuals die due to high cervical injuries at the site of accident. About 85% patients with SCI are alive 10 years

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after the injury. The annual expenses of looking after each of the American patients with SCI ranges from 20,000 dollars to 68,000 dollars. Unfortunately, no reliable Indian data on SCI is available. The well equipped 115 bedded Indian Spinal Injuries Center admits about 90 new patients every year, and the number of new spinal cord injuries in the city is about 150 per year.

A maiden survey conducted by the Academy of Traumatology in 2002 covering 145 hospitals across the countries and with the active participation of 55 centers, reflect the gravity of the problems and the dismal lack of facilities. There is no single National agency or a separate cell in the ministry of health to tackle the trauma related problems. There is a gross disparity of services across the country. Even in the metro cities, care is still in the embryonic state. Pre-hospital care is non-existent and most of the seriously injured are handled by the most junior staff. Only 4% of the ambulance personnel have certified training in handling trauma victims, and only 30% emergency rooms (ERs) are managed by physicians. We have ambulances with wireless systems in 30% hospitals, but communication with the hospitals is available in only 4% of the systems. The key factos in the comprehensive management of trauma cases in order to reduce mortality and morbidity following RTAs are:

- High level of political commitment
- Greater involvement of health professionals
- Active community participation
- Serious attempt of epidemiological surveillance of TBI
- Preventive measures
- Improving pre-hospital care and speedy evacuation

It is well established fact that is the accident victims are brought to the hospitals and received from initial medical care in under one hour, chances of survival (even with disabilities) are much higher. This is why the first hour following injury is called the golden hour. This has been achieved in the developed countries. Majority of us in India are not aware of the significance of the golden hour. The scenario at the site of accident is chaotic, transportation is tardy because of heterogenous and undisciplined traffic. The VIPs on the road add in no small measure to the difficulties of the transportation with their vehicles blaring sirens cutting through busy traffic while ambulances wait. The attitude of those manning the ERs leaves a lot to be desired. Over crowding and lack of standardized protocols are some of the major factors in delaying the proper management. The victim is lucky of the accident happens in the vicinity of a hospital. The medico-legal documentation and the court cases that drag on for years contribute to the feeling of apathy among the bystanders. I however still feel that transportation and management during the golden hour can be achieved in our country with concerted efforts. For this, the accident site should be made accessible, personnel should be trained to safely extricate the casualty and follow up with on-the-site resuscitation and expeditious transport without hinderance. It is also seen that if one medically clued up person takes charge at the site, every one else falls in line. One must ensure UABCC (*U*rgent *A*irway *B*reathing *C*irculation *C*ervical *S*pine) care and cardiopulmonary resuscitation (CPR) if required. As I have stated earlier, 50-60% of the casualties may have vertebral column injuries, or associated SCI. During transportation, AMPLE (*A*llergy *M*edication *P*ast medical history – diabetes, cardiac, epilepsy *L*ast meal *E*vents leading to accident) documentation must be completed as it might help doctors in the ERs to decide the therapeutic approach.

Now I would like to give you a glimpse of the state of affairs in the capital city of Delhi, where one would expect the best. The population of Delhi is exploding and the traffic scenes are becoming more and more chaotic by the day. There are 4.45 million registered vehicles in Delhi, 60,000 trucks pass through Delhi every day, and there are 2.8 million vehicles on the roads every day. The Delhi Police reported 9083 accidents with loss of 1982 lives in 2004. Of these, 50% were pedestrians, and 87% were killed by collision with trucks. The police challaned 4 million vehicles and collected nearly 430 million rupees. If even a quarter of this amount were to be ear-marked for the management of RTAs, the overall picture would improve significantly. On the whole, Delhi trauma care services are grossly inadequate. State of the art accident and trauma building is ready, but there is no administrative effort to make this hospital (with 180 intensive care beds and 100 additional beds) functional. The Delhi Government has taken initiative and procured 35 most modern ambulances and located them at strategic points, but these are grossly underutilized. On an average, there is less than one call per ambulance per day for trauma cases. They are fitted with the wireless system and are in communication with the control room, but are not connected to the hospitals. Under utilization is mainly due to complete lack of public and government awareness. Workload in four major government hospitals is immense. There is only one ear-marked 50-bedded Sushruta Trauma hospital, where 11,000 casualties were attended to in 2004; of these, 4000 were admitted and 269 major intracranial surgeries were performed.

Pre-hospital care needs lot of improvement. The information regarding beds and other facilities should be

available every day at the central control room and with PCR vans, so that the patient is evacuated to the appropriate hospital. The triaging of the injuries is essential. Privatising is the IN-thing today, and I suggest we privatize the ambulance services to start with. ERs should have a standard protocol to handle trauma victims. There should be a task force of specialists to handle polytrauma cases. Not only because of the stringent consumer protection act, but also on humanitarian grounds, one of the treating doctors should interact with the next-of-kin of the patients and keep them informed of the progress or deterioration as the case may be.

Since we are the main service providers, we can have a lot of say in helping the government to formulate the national policy for the trauma care. Peer group of senior neurosurgeons should interact with the local authorities to streamline the essential trauma care services. In Delhi, out of 120 neurosurgeons, at least 30 young neurosurgeons are on the roads to look after neurosurgical emergencies in various nursing homes. They should be attached to the major government hospitals in each zone. It is suggested that the government make trauma care and road safety as one of the key issues. The French President Jacques Chirac in 2002 made road safety as one of the key issues and recommended a sectoral approach. There was reduction in RTAs and fatalities by 20% in France. It is recommended that each major city should be divided into 5-6 zones, major hospital in each zone should be identified and upgraded to look after the injured. Young neurosurgeon practicing in each zone may be enrolled to look after head and spinal trauma. New PCR vans should have stretcher beds for transportation. We have 325 PCR vans in Delhi. Interestingly, there is an addition of 200 PCR vans and 15,000 policemen not because of the authorities have woken up finally to look after the trauma victims, but because of media coverage of frequent rape cases in Delhi. Government of India has already sanctioned Rs 1,000 crores for ambitious project for highway RTAs. The plan is to cover 13,000 kilometers of highway, to provide ambulances for every 50 kilometers and to provide hospital services at every 100 kilometers. The completion date is 2007. It appears that the government is gearing up to look after the road travelers. What about the facilities in the metros and smaller cities which are crying for resuscitation? The role of media in exposing scams and the extent of corruption at all levels by their sting operations is highly commendable. But the media should direct their efforts to inculcate public awareness, highlighting deficiencies and improvements of services and publishing quarterly statistics of the injured and the disabilities, so the responsible agencies wake up to do their jobs.

On 4th April 2004, on World Health day, the theme was "Road safety is no accident". Many conferences were held all over the world and new resolutions were adopted. I would like to quote here the concluding remarks of Rochelle Sobel, President of Association for safe International Travel, who said: "There are many roads, there is a single road that extends the length and breadth of our vast planet. Each one of us is responsible for a segment of that road. The road safety decisions that we make or don't make, ultimately have the power to affect the lives of people everywhere. We are one road, one world". I would like to conclude by saying that events like tsunami rekindles the spirit of human bondage, the whole world awakens and all segments of society in every nation, leaving behind their ethnic differences come forward to restructure the lives of the needy. Why cannot we maintain the same momentum to look after the injured and share their grief and disabilities to provide them better future. I admit it is a Herculean task but little effort by each one of us here may make a world of difference to the lives of the afflicted.