Thyrotoxicosis presenting with complete heart block


Disorders of cardiac rhythm and repolarization are frequently observed in thyrotoxicosis. Of these, sinus tachycardia and atrial fibrillation are the most common. Less commonly, conduction abnormalities including prolongation of PR interval and high-grade atrioventricular (AV) block may be encountered, usually in the presence of precipitating factors like infection and drugs. We report 3 cases of untreated thyrotoxicosis presenting with symptomatic complete heart block (CHB) in the absence of any known precipitating factors.

A 20-year-old female presented with one day history of recurrent syncopal attacks. She reported history of palpitations, heat intolerance and weight loss of 3 months duration. Examination revealed a thin and lean female with prominent stare, lid lag, and warm and moist skin and fine finger tremor. Her pulse rate was 34 beats per minute and blood pressure 160/70 mm Hg. Thyroid was diffusely enlarged with an audible bruit over it. Cardiac examination was unremarkable. Electrocardiogram (ECG) showed AV dissociation (atrial rate 100/minute, ventricular rate 34/minute). Chest x-ray was normal. Thyroid function tests showed triiodothyronine ($T_3$) 7.8 ng/ml (normal range 0.7-2.5 ng/ml), thyroxine ($T_4$) 16.9 µg/dl (normal range 5.5-13.5 µg/dl) and thyroid stimulating hormone (TSH) 0.2 µU/ml (normal range 0.4-5.0 µU/ml). A transvenous right ventricular pacing lead had to be inserted in addition to carbimazole 10 mg 3 times daily. The patient reverted to sinus rhythm on the fifth day.

Another patient, a 33-year-old female reported with a single episode of syncope. She had a preceding history of excessive sweating, palpitations and exertional dyspnea of 6 months duration. On examination, diffuse thyroid enlargement with a bruit was present. Pulse was 41 beats per minute and blood pressure 170/80 mm Hg. Cardiac examination revealed a grade II/VI systolic murmur at left parasternal area. Electrocardiogram showed AV dissociation (atrial rate 110/minute, ventricular rate 41/minute). Chest x-ray was normal. Thyroid function tests revealed $T_3$ 6.7 ng/ml, $T_4$ 15.8 µg/dl and TSH 0.3 µU/ml. Patient reverted to sinus rhythm the following day with intravenous atropine and isoprenaline. Carbimazole 10 mg 3 times a day was also given.

The third patient, a 38-year-old female was hospitalized for evaluation of cardiac syncope noticed 7 days prior to admission. She also had history of palpitations, weight loss, heat intolerance and excessive sweating for the past 8 months. Examination revealed an anxious look with warm and moist skin and diffuse thyromegaly. Pulse rate was 124 per minute, blood pressure was 130/60 mm Hg. Cardiac auscultation was normal. Electrocardiogram on admission showed sinus tachycardia. Thyroid function tests were $T_3$ 7.9 ng/ml, $T_4$ 16.1 µg/dl and TSH undetectable. The patient was given carbimazole 15 mg 3 times a day. She developed symptomatic CHB on third day of admission (atrial rate 105, ventricular rate 38 per minute) for which temporary pacing was performed. Patient reverted to sinus rhythm after 6 days.

Complete blood count, sedimentation rate, urine examination, serum electrolytes, serum immunoglobulins, antistreptolysin O, serum creatine kinase and liver function tests were normal in all 3 patients. Echocardiographic examination was also normal. Intracardiac electrophysiologic study, performed in sinus rhythm, was within normal limits and the block could not be reproduced. On 6 months follow up, all the 3 patients were euthyroid. There was no recurrence of CHB.

Hyperthyroidism is commonly associated with a spectrum of cardiovascular abnormalities that range from asymptomatic elevation of cardiac function indices to overt heart failure. Direct stimulant action of thyroid hormones on heart and their indirect effects via sympathovagal imbalance underlie most of these cardiovascular manifestations. Rhythm disturbances, particularly sinus tachycardia and other atrial arrhythmias including atrial fibrillation are also encountered frequently in thyrotoxic patients. Intra-atrial and intra-ventricular conduction disturbances each occur in approximately 15% of patients. Abbreviated refractory period of the AV node and shortened AV conduction time indicate a generally facilitated AV conduction in hyperthyroidism. However, AV conduction disturbances usually in the form of prolonged PR interval, can occur in up to 5% of thyrotoxic patients. Reports of CHB complicating thyrotoxicosis are only anecdotal. The present report of 3 cases of symptomatic CHB underscores the importance of serious conduction disturbance as an important clinical problem in thyrotoxicosis. Complete heart block was the dominant albeit transient cardiovascular manifestation of the thyroid disorder in all of the 3 patients. High grade AV block occurring in the context of thyrotoxicosis usually occurs in the presence of other conditions.
such as infection, myocarditis, electrolyte disturbances, or the use of drugs such as digoxin, propanolol, reserpine, or ajmaline. However, the etiology of CHB in our patients of thyrotoxicosis is unclear as none of the above-mentioned conditions was present nor was there any evidence of other known precipitators of AV conduction disturbance. Further, the quick resolution of conduction abnormality within days bore no relation to the achievement of euthyroid state, which does not usually occur until at least 6-8 weeks of continuous antithyroid drug therapy. Whether AV conduction disturbances can be included as primary disturbances in the spectrum of thyrocardiac disease remains elusive at present.

References


Simultaneous bilateral tubal pregnancy after ovulation induction with clomiphene citrate

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Simultaneous bilateral ectopic pregnancy is a rare and difficult to diagnose preoperative condition. The frequency of bilateral ectopic pregnancy has been estimated at 1 in 200,000 uterine pregnancies and from 1/725 to 1/1,580 ectopic pregnancies. We report a case of simultaneous bilateral tubal pregnancy; one ruptured and the other unruptured, following ovulation induction in a 25-year-old Indian woman.

The patient was a gravida-1 para-0, at 9 weeks gestation admitted with acute abdominal pain of 2 hours duration. This pregnancy resulted from ovulation induction with 100 mg of clomiphene citrate followed by intrauterine insemination (IUI). A transvaginal ultrasonogram 3 weeks after IUI showed a small intrauterine gestational sac without fetal pole. Her first pregnancy was a right-sided tubal pregnancy, which was also a result of ovulation induction with clomiphene citrate. She was treated with laparoscopic methotrexate (MTX) injection. This was 3 years ago. Clinical examination on admission revealed pallor and lower abdominal tenderness with stable vital signs. Vaginal examination showed tenderness on both fornices and cervical excitation. Transvaginal sonography revealed a small intrauterine gestational sac without fetal pole, a complex mass in the right adnexa and free fluid in the pouch of Douglas. Diagnostic laparoscopy followed by laparotomy and curettage (D&C) was performed immediately. We have found 100 cc of fresh blood and some clots in the peritoneal cavity. Right tube showed a large hematosalpinx, friable and adherent to the ovary. Left tube showed a 2 cm unruptured ampullary ectopic. Right salpingectomy and left linear salpingostomy were carried out. Moderate amount of curettage was obtained on D&C. Histopathological examination identified chorionic villi in each tube, thus, confirming the presence of a bilateral tubal pregnancy and secretory endometrium with decidual changes in the endometrial curetting. The postoperative course was unremarkable and the patient was discharged on day 5 after the operation.

Bilateral tubal pregnancies and other unusual forms of ectopic gestations are seen more often today, as part of the rising incidence of ectopic
Voluntary seatbelt usage

Voluntary seatbelt usage. Did we reach there yet?

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Some of these guys drive like maniacs trying to out do one another, so make sure that you have your seatbelt on at all times, is the advice given to all foreign visitors in the Kingdom of Saudi Arabia (KSA).

Not surprisingly, KSA loses over 21 billion Saudi Riyals annually due to sharp increase in road traffic accidents. Road traffic accidents are a major cause of morbidity and mortality among young Saudis and plenty of studies in the Kingdom stand witness to this unfortunate truth.

Seatbelts were first introduced in 1920 in the United States of America (USA), to keep the occupants in the cars from bumpy rides. By 1970, it was realized that seatbelt restraints protected the driver and the occupants from the severity of injuries. Legislation was then passed for mandatory use. The presence of cars’ seatbelt does not mean that the occupants will use it. Seatbelt usage exceeds over 90% in some European countries and in USA up to 86%.

The western countries have reached this compliance due to legislation, health education and fines for non users. The objective of this study was to carry out an unobtrusive observation on seatbelt use at 6 different centers in Dhahran and Al-Khobar, KSA and to assess the compliance of seatbelt usage by people who are in the drivers seat at various locations. Six hundred drivers were unobtrusively observed by the investigators. The locations were: entry and exit gate of Saudi Aramco, King Fahd University of Petroleum and Minerals (KFUPM), Dhahran, first traffic light on entry into Al-Khobar, the end of Dammam-Al-Khobar highway, Al-Khobar Corniche, entry and exit gate of King Fahd Hospital of the University (KFHU) and entry of Al-Rashed Mall in Al-Khobar. The study was made 3 times weekly, each time, the driver of the third car at the location is the one observed, until the required number was achieved. The percentage of seatbelt users differed at different locations. The voluntary usage of seatbelts ranged from 17-100% with a mean of 56.8%. At Saudi Aramco, the seatbelt usage was 100% while 98% in KFUPM. At these 2 locations the prevalence was highest due to regular checks and penalties levied by the organizations. At other locations the mean usage was 35.75% (range 17-49%) with no checkpoints nor penalties if caught in these 2 locations. Table I gives the voluntary usage of seatbelts and their

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References

percentages. Every 14 seconds someone is injured in a motor vehicle accident and every 12 minutes someone is killed. Seatbelts are the most effective means of reducing serious injuries and deaths on roads and in hospitals.\textsuperscript{6} Seatbelts reduced the total number of injuries by 34\%, major injuries by 57\%, and minor injuries by 20\% and no deaths occurred among the belted group. As early as 1986, Mufti\textsuperscript{7} raised the issues of medico legal aspects of seatbelt legislation after the findings that suggested that in Riyadh region only 6.9\% of the population used seatbelts. Shawan et al\textsuperscript{8} in the Eastern Province found that voluntary usage of seatbelts was only 19.4\% in males and 8\% in females. At present seatbelt use is mandated by Royal Decree before the new millennium but unfortunately, it appears that the seatbelt usage did not increase nor the severity of injuries due to road traffic accidents decrease. Unobtrusive survey is believed to be one of the better ways to carry out surveys, where unbiased and truthful assessment is needed. The practice of seatbelt usage in organizations like Saudi Aramco and KFUPM of over 98\% shows that drivers are disciplined and do not want to be penalized, hence, they routinely use seatbelt restraints as compared to drivers on the streets who flout the mandatory use of seatbelts. People at large should be reminded repeatedly of the benefits of using seatbelts in not only preventing deaths but also reducing severity of injuries to themselves and saving costs from hospital acute care and use the same funds elsewhere for better purposes (such as, improvements of healthcare in communities and the country at large). The question still lingers in the minds of the healthcare professionals that have we carried out enough to promote voluntary use of seatbelts? The answer to this is not satisfactory enough. We are at present not even close to where we should be in making our drivers use seatbelts.

In conclusion, this sample survey indicates that the average use of seatbelts in the east coast of KSA is very low. A multi-modality effort is required to reach a compliance of seatbelt usage to reach international levels. We believe that the following ways could increase the use of seatbelts among the population: 1) Children at school and colleges should be systematically approach and reminded repeatedly on the benefits of seatbelt use. 2) Routine and repeated media (print, radio and television) advertisements to use seatbelt restraints. 3) Hoardings at important and busy intersections on the benefit of seatbelt usage. 4) Repeated road campaigns should be carried out, not only by police personnel but also physicians.

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References


\begin{table}[h]
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\caption{Voluntary usage of seatbelts (%).}
\begin{tabular}{|l|l|l|}
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Site & Number of drivers observed & Drivers using seatbelts \\
\hline
Saudi Aramco & 100 & 100 \\
KFUPM & 100 & 98 \\
Al-Khobar City & 100 & 49 \\
Al-Khobar Corniche & 100 & 46 \\
KFHU & 100 & 31 \\
Al-Rashed Mall & 100 & 17 \\
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KFUPM - King Fahd University of Petroleum and Minerals, Dhahran. KFHU - King Fahd Hospital of the University, Al-Khobar.