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ORIGINAL ARTICLE

Evaluation of referrals to the Migraine Clinic at Mater Dei hospital

A Clinical Audit

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Background

The recently established migraine clinic at Mater Dei hospital in Malta has been receiving a steady stream of referrals from a number of sources for the investigation and management of patients with suspected migraine headaches. This necessitated the need for a retrospective analysis and clinical audit to determine the appropriateness of referrals to the migraine clinic.

Methods

Data was collected retrospectively from tickets of referral and migraine clinic notes from patients' medical records over an 18 month period.

Results

A total of 63 new case referrals were received with an appointment being given within an average of 18 weeks from the date of referral; 74.6% were female and 25.4% were male with a mean age of 35 years. Six discrete sources of referral were identified including General Practitioners (GP) 25.4%, Accident and Emergency (A&E) 15.9%, inpatients 11.1%, ophthalmology emergency 9.5%, ENT emergency 3.2% and outpatients 3.2%; Attendance rates to the first appointment were 65.1%; 55.1% of patients received a diagnosis of primary headache, of which migraine with aura was the most common (63.0%); 49% of attending patients were referred appropriately with 37.5% of these being referred by GPs and 29.2% being referred from the emergency services.

Discussion

Just under half of referrals to the new migraine clinic are appropriate, necessitating the need to improve the quality and accuracy of referrals by defining a clear pathway for referral as well as improving the management at the primary care level by educating both providers and patients in the way of diagnosing and managing headache disorders.

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Being one of the most debilitating headache disorders in the young, working population, migraine has a significant impact on patients' quality of life, productivity and socioeconomic status.[1] Local data on the epidemiology of migraine are few, with prevalence rates being largely inferred from an international study conducted by the Global Burden of Diseases, Injuries, and Risk Factors (GBD) study, 2016.[2] The migraine prevalence rate is estimated to be between 18,000 and 19,000 per 100,000 population, making the mean total prevalence of migraine in Malta around 80,226 individuals (17.4%) at the time.[3] Furthermore, a European health survey conducted in 2008 ranked migraine as the 5th commonest health condition experienced in Malta (morbidity rate of 14%) with medicines for headache and migraine being the most commonly used over-the-counter medicines at 46.8%, doubling from 2002.[4,5] The socioeconomic impact of migraine in Malta is therefore expected to be significantly large, especially when considering both the direct (health service use) and indirect costs (reduced productivity and social activities)[6], as well as the global increase in rates of years lived with disability (YLDs) due to migraines.[7]

The need for a dedicated specialised clinic to manage the burden of migraine on the local healthcare system as well as the general neurology clinics is therefore self-evident. Since its establishment in January 2019, the migraine clinic at Mater Dei has been receiving a steady stream of referrals from both primary and secondary care specialists. The aim of this audit is to determine the appropriateness of these referrals as well as to collect and analyse data on patient demographics, sources of referral, attendance rates, investigations, diagnoses and disposition. This will also provide useful information on the local migraine population epidemiology and efficacy of the clinic; as well as identifying the need to establish and implement a national migraine referral guideline to streamline and maximise appropriate referrals so that specialist care may reach those most in need.

METHODS

Qualitative and quantitative data were collected retrospectively from consecutive patients newly referred to the migraine clinic over a period of 18 months from the date of the first clinic on the 3rd of June 2019 till the 7th of December 2020. Data were obtained from patients' physical medical records, tickets of referral (TOR) as well as electronic medical records from Mater Dei hospital IT systems including iSOFT clinical manager and Electronic Case Summary (ECS) programs. These data were recorded and analysed using the Microsoft Excel program. Appropriateness of referral was determined using two objective criteria in order to reflect those factors defining patients most likely to require specialist care. These were (i) the headache diagnosis obtained after attendance to the migraine clinic and (ii) the long-term follow up status (long-term follow up being considered as two or more follow up appointments). Patients who fulfilled only one of the above criteria were excluded, therefore this includes patients correctly diagnosed with migraine but not requiring long-term follow up as well as patients diagnosed with any headache other than migraine who may have received long-term follow up for whatever reason.

RESULTS

The first referrals to the migraine clinic were received in late January 2019 with the first clinic being held five months later, on the 3rd of June 2019. A total of 63 new case referrals were received over a period of 21 months, with an appointment being given within an average of 18 weeks (range 5 - 35 weeks) from the date of referral. Of these cases, 47 were female (74.6%) and 16 were male (25.4%), with ages ranging from 16 to 70 years (mean of 35 years). The majority of patients were Maltese nationals at 76.2% with foreigners comprising the remaining 23.8%.

Six discrete sources of referral were identified (Figure 1), which in order of decreasing percentage of total referrals were as follows: General Practitioners (GP) 25.4%, Accident and Emergency (A&E) 15.9%, inpatients 11.1%, ophthalmology emergency 9.5%, ENT emergency 3.2% and outpatients 3.2%. The largest proportion of referrals however (31.7%) had an unidentified source due to either incomplete or missing TORs.

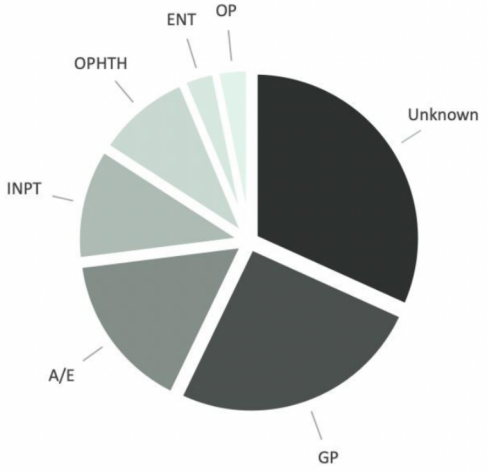

Figure 1 *Pie chart showing the distribution of referral sources to the migraine clinic*

Attendance rates to the first appointment were 65.1% with the remaining 34.9% not attending. Of those not attending their first appointment, 14 (63.6%) were discharged and 8 (36.4%) were given a re-appointment. Of those attending their first appointment, one patient (2.4%) was discharged immediately, 11 patients (26.8%) were discharged after the second appointment and the remaining 29 patients (70.7%) received longer term follow up. Attendance rates to follow up appointments were 70.7%, with the remaining 29.3% not attending.

Twenty seven patients (55.1%) attending the migraine clinic received a diagnosis of primary headache, of which migraine with aura was the most common (63.0%), followed by migraine without aura (18.5%), Tension Type Headache (TTH) (11.1%), coital headache (3.7%) and primary stabbing headache (3.7%). Three patients (6.1%) were diagnosed with a secondary headache, of which two were due to Medication Overuse Headache (MOH) and one patient had an intraparenchymal haemorrhage. Eleven patients (22.4%) had a mixed cephalgia which were composed of various combinations of migraine with/without aura with TTH and/or MOH. Four patients (8.2%) were still awaiting diagnosis at the time of data collection with a differential including probable migraine with aura, hemicrania continua and migraine. A further four patients (8.2%) had a neurological problem other than headache including diabetic polyneuropathy / cervical myelopathy, non-specific visual disturbance, L5/S1 radiculopathy and musculoskeletal pain (see Figure 2, Table 1).

The data show that 24 patients (49% of attending patients; 38.1% of all referrals) were referred appropriately. Furthermore, of the appropriate referrals, 37.5% were referred by GPs, 29.2% were referred from emergency services (including ENT and ophthalmology emergencies), 16.7% were referred from an unknown source, 12.5% from inpatient referrals and 4.2% from outpatient referrals (see Figure 3).

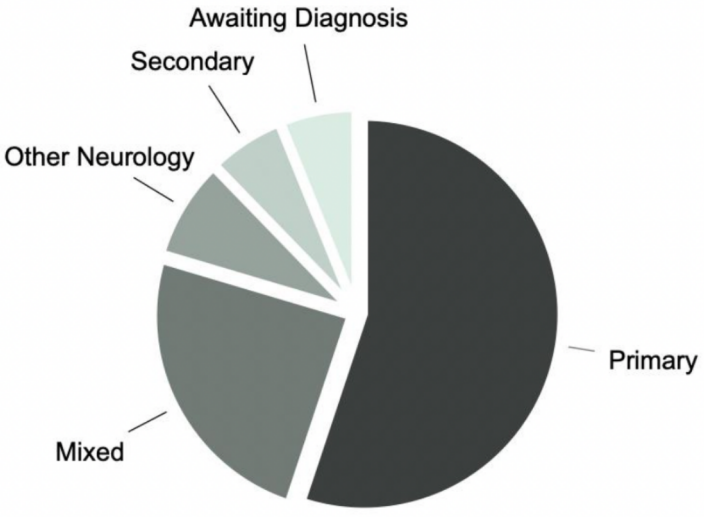

Figure 2 *Pie chart showing the distribution of headache disorders diagnosed at the*

Table 1 *Headache diagnosis*

Diagnosis	Number
Primary (n = 27)	
Migraine with aura	17
Migraine without aura	5
Tension Type Headache (TTH)	3
Coital headache	1
Primary stabbing headache	1
Secondary (n = 3)	
Medication Overuse Headache (MOH)	2
Intraparenchymal haemorrhage	1
Mixed (n = 11)	
Migraine with aura / TTH	5
Migraine without aura / TTH	3
Migraine without aura / MOH	2
Migraine without aura / TTH / MOH	1
Awaiting Diagnosis (n = 4)	
Probable migraine with aura	2
Hemicrania continua / Migraine	1
Probable cluster headache	1
Other Neurology (n = 4)	
Diabetic polyneuropathy/Cervical myelopathy	1
Non-specific visual disturbance	1
Left L5/S1 radiculopathy	1
Musculoskeletal pain	1

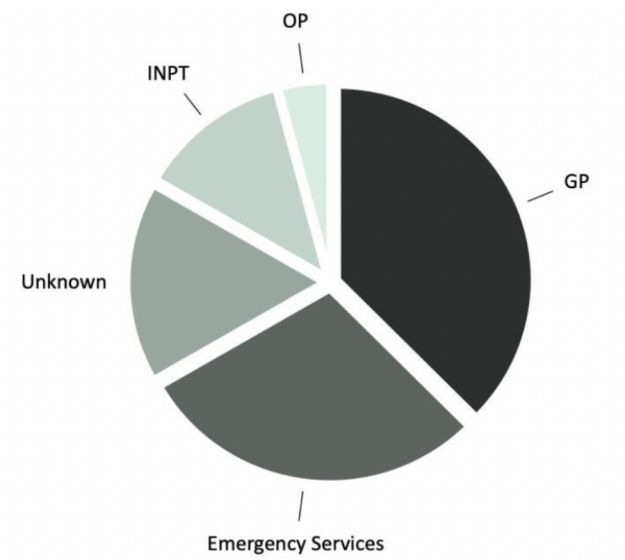

Figure 3 *Pie chart showing distribution of appropriate referrals by source of referral*

DISCUSSION

This clinical audit provides the first data on the recently established migraine clinic allowing for the identification of the various referral sources and their appropriateness as well as patient demographics and the overall distribution of headache disorders according to the International Classification of Headache Disorders, 3rd Edition (ICHD-3).[8] Although three quarters of patients referred to and attending the migraine clinic were confirmed to have a diagnosis of migraine, just under half of the referrals were found to be appropriate using the criteria stipulated above.

The demographic data obtained on patients attending the migraine clinic over an 18 month period have shown a concordance with observations in other primary and secondary care clinics that manage headaches in Europe.[9-12] Three quarters of the patient cohort were middle aged females with a quarter being male. A similar proportion were of Maltese and foreign nationality respectively.

Excluding the referrals of unknown origin, which unfortunately comprised a significant proportion of the results obtained, most referrals were independently received primarily from general practitioners working in health centres (25.4%). Considering however, the combined referrals from the emergency department together with those from ophthalmology emergency as well as otorhinolaryngology (ENT) emergency, a greater percentage of referrals were received overall (36.5%). Inpatient and outpatient referrals were comparatively minimal. This highlights the importance of targeting the former two primary sources when implementing any future referral pathways. More than one third of patients (34.9%) failed to attend their first appointment with the majority (63.6%) being discharged without reappointment. Reasons for non-attendance remain unknown, however one study on Did Not Attend (DNA) rates in a neurology outpatient clinic suggests that most common reason is that patients simply forget.[14]

Over half of attendees (55.1%) were diagnosed with a primary headache of which 81.5% were diagnosed with a form of migraine. Together with the mixed cephalgias comprising 22.4% of diagnoses, these patients were the most likely to benefit from referral to the migraine clinic, except that just over half may have well been managed in the primary care setting as long-term follow ups were not given. These results are in line with those of other studies.[9,15] and reflect poor management of headache disorders in the primary care setting as well as incorrect referral to secondary care services where resources are limited and costs are greater.[17]

Studies have shown that patients with headache disorders may be safely managed in the primary care setting, and that the majority of referrals to specialised clinics were unnecessary.[9,12,13] As the burden of migraine disorders on patients, society and the economy is becoming more apparent[2] and an increase in the incidence and prevalence of the disabling disease progresses globally[16], we forecast a proportional and exponential increase in referrals to specialist secondary care. Given the lack of clearly defined referral pathways locally and based on the reasonable assumption that a specialised clinic such as the one under study should receive patients with chronic or treatment refractory migraines, we would like to propose the development and implementation of a national migraine referral guideline. This will have a threefold impact including to (a) streamline and maximise appropriate referrals, (b) minimise referrals of other primary headaches and (c) guide referrers in selecting migraine sufferers most in need of specialised care.

This audit has encountered several limitations which were beyond the control of the authors, particularly relatively low new-case referrals within the 18 month data collection period. We strongly suspect that this was related to the start of the SARS-CoV-2 pandemic in April 2019 as the migraine clinic is currently running double the amount of clinic sessions than the previous year. Another limitation was data accessibility and data quality (e.g. missing TORs), both of which may impact the findings of this audit.

CONCLUSION

Our findings suggest that just under half of referrals to the new migraine clinic are appropriate, necessitating the need to improve the quality and accuracy of referrals by defining a clear pathway for referral as well as improving the management at the primary care level by educating both providers and patients in the way of diagnosing and managing headache disorders.

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ETHICAL APPROVAL

Data protection approval obtained from MDH data protection on 3/1/21 together with approval from MDH CEO and the clinical chair of the MDH department of neuroscience, Dr Norbert R Vella.

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